

Mexican species of the genus *Omphale* Haliday (Hymenoptera: Eulophidae), a taxonomic study

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Abstract.—Mexican species of *Omphale* Haliday are presented, including a key for their identification. The interpretation of *Omphale* and of species groups follows Hansson (1996b). Fortyfour (44) species are included, of which 30 are described as new: *angusticornis* (female), *carinata* (female, male), *cherana* (female, male), *cumbrensis* (male), *dentata* (female, male), *flaviscutellum* (female, male), *fossata* (female), *foveata* (female, male), *fulgida* (female, male), *gracilis* (female), *indistincta* (female, male), *lanceolata* (female), *metallica* (female, male), *nita* (female), *notaula* (female, male), *obscura* (female, male), *oriampila* (female), *pallida* (female, male), *petatlana* (female, male), *petiolata* (male), *sola* (female, male), *stigmatis* (female), *tempora* (female, male), *tria* (female, male), *triangulata* (female), *uruapana* (female, male), *valida* (female), *whartoni* (female, male), *woolleyi* (female, male), *zohnerowichi* (male). Thirteen previously described species are newly recorded from Mexico. The genus is divided into seven species groups, two of which are newly created, in addition there are six unplaced species. The phylogeny of species groups found in North America (including Mexico) is hypothesized. The male genitalia is shown to be a valuable tool for the classification, as was the case with Nearctic species (Hansson 1996b). Nothing is known concerning the biology of the species.

INTRODUCTION

Mexico holds a major part of the world's biodiversity, including many endemic species (McNeely *et al* 1990). The biological wealth is a result of the great habitat variation, complex topography, heterogeneity of soils and climate, geological history and location—being a pathway between two major zoogeographical regions: the Nearctic and Neotropical regions. The insect fauna of Mexico is poorly known, but when studied, e.g. certain groups of beetles (Whitehead 1973, Liebherr 1991) and parasitic wasps (Hansson 1996a), the diversity revealed is high.

Omphale Haliday is a large and fairly well known genus in temperate areas. In the Palearctic region Graham (1963) and Gijswijt (1976) have formed a base for the knowledge of *Omphale*. Species of Canada and the United States have been studied recently by Hansson (1996b). *Omphale* is also well represented in subtropical and

tropical areas of the Americas, but is practically unknown taxonomically, and otherwise, from these parts. Prior to this study only one species of *Omphale* was recorded from Mexico.

The biology of *Omphale*-species is very poorly known. The current, scanty knowledge stems mainly from European species, where gallmidges (Diptera: Cecidomyiidae) have been found to be the principal host group (Boucek and Askew 1968; Gijswijt 1976). The few host records from the Nearctic region (Hansson 1996b) support these findings. There are no host records from Mexico.

Compared to *Omphale* in the Palearctic the fauna of Nearctic region (including all of Mexico) has a higher diversity, being richer in both species and species groups. There are no species groups exclusively found in the Palearctic, all groups present in the Palearctic are also found in the Nearctic. The Nearctic region (including

Mexico) holds seven species groups not present in the Palearctic. Also when comparing the number of species, far more have been found in the Nearctic region (including Mexico) (87), than in the Palearctic (34), indicating a peak in diversity in the New World. In the Americas some groups appear only in temperate areas, i.e. species groups of *salicis*, *versicolor* and *acamas*, and these groups are also present in the Palearctic, while others only appear in subtropical to tropical areas, i.e. species groups of *cherana* and *notaula*.

The purpose of this study is to introduce the subtropical and tropical New World species of *Omphale* into the classification of this genus. No such study has ever been published.

This study is based mainly on material from Texas A & M University (TAMU), College Station, with additional material from Canadian National Collection of Insects (CNC), Ottawa and Natural History Museum (BMNH), London. Unless otherwise stated the material is from Mexico.

The method used when studying male genitalia is accounted for in Hansson (1996a). The terminology of male genitalia in *Omphale* is indicated in Fig. A. The description of each species includes the bulk of specimens examined, not just the primary type, and the observed variation is included in the descriptive text. Ratios for the species are accounted for in Table 1. The descriptions of previously described species are to be found in Hansson (1996b).

PHYLOGENY AND CLASSIFICATION

The monophyly of *Omphale* was demonstrated by Hansson (1996b) through a single apomorphy, the possession of enlarged volsellar setae on the male genitalia, a unique feature within Entedoninae. These setae are like spears, pointing straight backwards (Figs 92–99, 103–110), occasionally bent (*salicis* group, not represented in Mexico, see figs 176, 177 in Hansson (1996b)). In other genera of Entedoni-

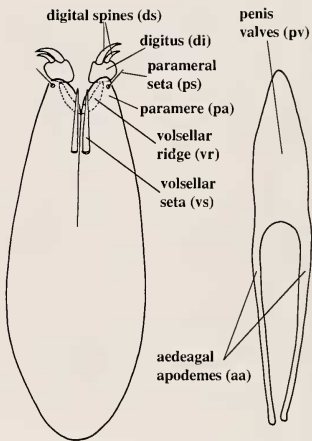


Fig. A. Male genitalia of *Omphale ergimus* (Walker): phallobase (left) and aedeagus (right). For a discussion of the morphology of male genitalia in Entedoninae see Hansson (1996a).

nae the volsellar setae are thin, or missing (*Perditorulus* only (Hansson 1996a)).

The species groups used in this paper are the same as used in Hansson (1996b), but due to the addition of tropical elements, two species groups are newly created.

When autapomorphies of the species groups (Tab. 2) were excluded, apomorphies accounted for in Tab. 3 were available for analysis of the phylogeny of species groups of *Omphale* in North America (including Mexico). Due to the lack of sufficient number of characters unplaced species were excluded, otherwise the analysis could not be completed. The analysis was carried out using PAUP 3.0, and based on matrix in Tab. 4—character 1 weighted as 2, the others as 1. The analysis yielded two equally parsimonious trees (15 steps, CI=0.67, RI=0.76) (Figs 126, 127).

KEY TO MEXICAN SPECIES OF *OMPHALE*

1. Scape triangular (Fig. 30); forewing with characteristic pattern (Fig. 40) 19. *O. triangulata* n.sp. (female)
 - Scape not triangular; forewing hyaline, or with different pattern than in Fig. 40 2
2. Mouth opening very wide (Fig. 85), $1.7\times$ the height of eye in female, $1.5\times$ in male 44. *O. tempora* n.sp. (female, male)
 - Mouth opening narrower 3
3. Frons pale nonmetallic between frontal cross-groove and antennal toruli (sometimes with dark cross-stripes) 4
 - Frons with at least upper half between cross-groove and toruli dark and metallic 12
4. Scutellum completely dark and metallic 5
 - Scutellum completely or partly pale nonmetallic 8
5. Clypeus as long as wide, quadrate 20. *O. vinacea* Hansson (female, male)
 - Clypeus transverse, or with different shape 6
6. Clypeus poorly delimited dorsally (as in Fig. 51) 28. *O. pallida* n.sp. (female)
 - Clypeus distinctly delimited 7
7. Flagellomeres 2-4 about as long as wide (Fig. 28) 18. *O. tria* n.sp. (female)
 - Flagellomeres 2-4 longer than wide (Fig. 23) 14. *O. divina* (Girault) (female)
8. Clypeus poorly delimited dorsally (as in Fig. 51) 9
 - Clypeus distinctly delimited 10
9. Male flagellum with a single proximal whorl of fine setae on each segment (Fig. 48); female flagellomeres slender (Fig. 49), with proximal ventral setae from flagellomere 2 and following flagellomeres conspicuously long; 7th gastral tergite in female $3\times$ as long as wide at base 23. *O. acuminativentris* (Girault) (female, male)
 - Male flagellum with some scattered setae (Fig. 47), setae stout and bent; female flagellomeres stout (Fig. 46), ventral setae short; 7th gastral tergite in female at most $2.3\times$ as long as wide at base 27. *O. obscurinotata* (Girault) (female, male)
10. Clypeus transverse (Fig. 54), with rounded sides 29. *O. angusticornis* n.sp. (female)
 - Clypeus as long as wide 11
11. Mesoscutum and scutellum with strong reticulation, hence dull 16. *O. petatlana* n.sp. (female, male)
 - Mesoscutum and scutellum with weak reticulation, hence shiny 20. *O. vinacea* Hansson (female, male)
12. Notauli complete and deep throughout (Fig. 41) 13
 - Notauli at most delimited in posterior $\frac{2}{3}$ 15
13. Scutellum with two deep pits (Fig. 41) 21. *O. foveata* n.sp. (female, male)
 - Scutellum without pits 14
14. Mesoscutum and scutellum with weak reticulation; digitus in male genitalia with 2 spines 22. *O. notaula* n.sp. (female, male)
 - Mesoscutum and scutellum with strong engraved reticulation; digitus in male genitalia with 1 spine (Fig. 107) 43. *O. sola* n.sp. (female, male)
15. Midlobe of mesoscutum with 1 pair (posterior pair) of setae 16
 - Midlobe of mesoscutum with 2 pairs of setae 17
16. Mouth opening as wide as height of eye in female, $1.3\times$ as wide as height of eye in male; temples large (Fig. 15) 10. *O. cherana* n.sp. (female, male)
 - Mouth opening $0.7\times$ as wide as height of eye in female, $1.0\times$ as wide as height of eye in male; temples small (Fig. 18) 11. *O. flaviscutellum* n.sp. (female, male)
17. Head smooth and shiny, without reticulation; antennal scrobes join slightly below frontal cross-groove (Fig. 87); male scape with a dent medioventrally (Fig. 79) 39. *O. dentata* n.sp. (female, male)
 - Head at least with some reticulation; antennal scrobes join on frontal cross-groove or meet cross-groove separately; male scape without ventral dent, or with apicoventral dent 18

18. With pale spots below antennal toruli, or with entire frons below level of toruli pale (clypeus sometimes metallic) 19
 - Without pale spots below toruli, frons below level of toruli more or less metallic 28
19. Clypeus poorly delimited, at least dorsally (Figs 51–52) 20
 - Clypeus distinctly delimited (Figs 54–56, 63) 23
20. Clypeus dark and metallic; male flagellomeres with setae confined to a basal whorl (Fig. 45) 24. *O. fulgida* n.sp. (female, male)
 - Clypeus pale nonmetallic; male flagellomeres with scattered setae (Fig. 83) 21
21. Clypeus with distinct lateral borderlines (as in Fig. 89) 41. *O. indistincta* n.sp. (male)
 - Clypeus poorly delimited throughout 22
22. Forewing densely pubescent (Fig. 58) 26. *O. masneri* Hansson (female)
 - Pubescence on forewing less dense (Fig. 57) 28. *O. pallida* n.sp. (female, male)
23. Clypeus yellow to pale brown, nonmetallic 29. *O. angusticornis* n.sp. (female)
 - Clypeus dark and metallic 24
24. Clypeus $8.5\times$ as wide as long (Fig. 63) 31. *O. oriampala* n.sp. (female)
 - Clypeus at most $2.5\times$ as wide as long 25
25. Clypeus large (Fig. 56); forewing speculum small (Fig. 64) 34. *O. zolnerowichi* n.sp. (male)
 - Clypeus smaller; forewing speculum larger 26
26. Frons close to mouth opening pale nonmetallic; male scape widest medially 30. *O. cumbrensis* n.sp. (male)
 - Frons close to mouth opening dark and metallic; male scape widest below middle 27
27. Female mouth opening $1.2\text{--}1.4\times$ the height of an eye; male inseparable from following species 32. *O. scutellata* (Girault)
 - Female mouth opening as wide as height of an eye 33. *O. vulgaris* Hansson
28. Frons with cross-ridge (Fig. 1) 29
 - Frons without cross-ridge 37
29. 7th gastral tergite in female $4.2\times$ as long as wide at base; dorsellum hidden under scutellum, not visible in dorsal view 3. *O. lanceolata* n.sp. (female)
 - 7th gastral tergite in female considerably shorter, usually shorter than width of base; dorsellum visible in dorsal view 30
30. Clypeus dark and metallic 31
 - Clypeus paler than surrounding frons 33
31. Scutellum with strong and dense reticulation, meshes elongate and scutellum hence appearing striate 7. *O. stigmatis* n.sp. (female)
 - Scutellum with weak to strong reticulation, meshes not elongate and scutellum hence not appearing striate 32
32. Frons laterad of clypeus brownish with weak metallic tinge; male genitalia (Fig. 93): inner digital spine more curved, outer digital spine stout and straight 9. *O. woolleyi* n.sp. (female, male)
 - Frons as dark and metallic as clypeus; male genitalia (Fig. 101): inner digital spine less curved, outer digital spine slender and slightly curved 5. *O. metallica* n.sp. (female, male)
33. Male: petiole $1.0\text{--}1.3\times$ as long as wide, scape elongate with narrow base (Fig. 5), $4.3\times$ as long as wide 6. *O. petiolata* n.sp. (male)
 - Male: petiole transverse, scape with about same width throughout, or if with narrow base then $3\times$ as long as wide 34
34. Female forewing with infusate area below marginal vein, infuscation reaching to hind margin of wing (Fig. 13); male scape widest at base (Fig. 4) 8. *O. whartoni* n.sp. (female, male)
 - Female forewing never with just the area below marginal vein infusate, either completely hyaline, or with infusate area below stigmal vein, or with infusate area below stigmal and marginal veins; male scape widest at apex 35

35. Reticulation on thoracic dorsum fine and weak 4. *O. marylandensis* (Girault) (female, male)
— Reticulation on thoracic dorsum strong 36

36. Clypeus comparatively wide, 2.3× as wide as long; female flagellomeres 1–4 comparatively short (Fig. 8) 2. *O. elevata* Hansson (female, male)
— Clypeus narrower, 1.6–1.7× as wide as long; female flagellomeres 1–4 long (Fig. 9) ... 1. *O. acuminaticornis* (Girault) (female, male)

37. Clypeus distinctly delimited 38
— Clypeus poorly delimited, or without upper border 50

38. Midlobe of mesoscutum delimited from scutellum by a distinct and wide furrow (Fig. 66) 35. *O. fossata* n.sp. (female)
— Midlobe of mesoscutum not delimited from scutellum by a furrow 39

39. Flagellum with distinct 3-segmented clava (Figs 28–29), i.e. with apical three flagellomeres firmly attached to one another, flagellomeres less than 2× as long as wide 40
— Flagellum without distinct clava, i.e. all flagellomeres with distinct constrictions, flagellomeres usually longer 41

40. Female frons predominantly pale nonmetallic; male genitalia (Fig. 95): digitus 9× as long as wide, volsellar setae placed just below apex of parameres 18. *O. tria* n.sp. (female, male)
— Female frons dark and metallic; male genitalia (Fig. 99): digitus 3.7× as long as wide, volsellar setae placed at apex of parameres 13. *O. carinata* n.sp. (female, male)

41. Antennal toruli situated in level with lower level of eyes 42
— Antennal toruli situated distinctly above lower level of eyes 45

42. Foretibia with a sharp edge along frontal margin (as in Fig. 71); thoracic dorsum with raised and rather strong reticulation 17. *O. poeta* (Girault) (female, male)
— Foretibia without edge along frontal margin; thoracic dorsum with engraved fine reticulation 43

43. Females, i.e. gaster with an ovipositor visible in ventral view and reaching along major part of gaster 12. *O. australis* Hansson
— Males 44

44. Male genitalia (Fig. 97): volsellar setae distinctly curved at apex ... 14. *O. divina* (Girault)
— Male genitalia (Fig. 98): volsellar setae straight 12. *O. australis* Hansson

45. Marginal vein as long as height of forewing 46
— Marginal vein 1.3–1.5× as long as height of forewing 47

46. Flagellomeres with about same width (Figs 24–25); body dark and metallic 15. *O. obscura* n.sp. (female, male)
— First flagellomere distinctly wider than following flagellomeres (Figs 31–32); body yellow nonmetallic to infusate 20. *O. vinacea* Hansson (female, male)

47. Vertex and thoracic dorsum with raised strong reticulation; foretibia with raised carina along dorsal surface (Fig. 71) 38. *O. valida* n.sp. (female)
— Vertex and thoracic dorsum with weak reticulation; foretibia without raised carina ... 48

48. Mesoscutum and scutellum smooth and shiny, with weak traces of reticulation in some places; antennal scrobes join below frontal cross-groove 42. *O. nita* n.sp. (female)
— Mesoscutum and scutellum reticulate; antennal scrobes join on frontal cross-groove ... 49

49. Mouth opening narrower than height of an eye; clypeus more or less quadratic, about as long as wide 36. *O. semiglobosa* Hansson (female, male)
— Mouth opening 1.0–1.1 as wide as height of an eye; clypeus semicircular, 2× as wide as long 37. *O. uruapana* n.sp. (female, male)

50. Clypeus pale nonmetallic 25. *O. gracilis* n.sp. (female)
— Clypeus dark and metallic 51

51. Setae on vertex and thoracic dorsum long (Figs 75, 88)—outermost seta on vertex as long

- as distance between hind ocelli, hind pair of setae on mesoscutum longer than distance separating them 40. *O. ergimus* (Walker) (female, male)
 — Setae on vertex and thoracic dorsum shorter 41. *O. indistincta* n.sp. (female)

Omphale Haliday

Diagnosis.—Clypeus clearly delimited (in some species vaguely delimited (e.g. Fig. 51), or upper borderline missing (e.g. Figs 52–53)); pronotum reduced and hardly visible from above; reticulation on thoracic dorsum fine and engraved (raised or smooth in a few species); midlobe of mesoscutum with two pair of setae (one pair in species group *cherana*); petiole short and transverse. Volsellar setae in male genitalia enlarged (Figs 92–99, 103–110).

Omphale is differentiated from other genera with a delimited clypeus in Hansson (1996b:7).

Literature.—Hansson (1996b) revised the Nearctic species of *Omphale*.

Species group *bicincta*

Diagnosis.—Head with frontal cross-ridge. Male flagellomeres with verticillate setae, i.e. with a single basal whorl of setae on each flagellomere (Figs 4, 5, 7). Male genitalia (Figs 92–93): volsellar setae long and strong and placed just below base of volsellar ridges; digitus long and slender, inner digital spine larger than outer, placed at different levels; paramere protruding with apex pointed, with two setae, one short at apex and one long below apex (not illustrated), or with only one seta at apex of paramere; aedeagus (Fig. 112) long and slender with median part of penis valves expanded, aedeagal apodemes 0.7–0.9× as long as penis valves. Flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson 1996b). Forewing usually with two fuscous spots or bands, one below stigmal vein and one below middle of marginal vein (infuscation lacking in some species, or with only one spot/band below marginal vein (Fig. 13)).

Apomorphies.—Head with frontal cross-

ridge; male flagellomeres with verticillate setae. Male genitalia: aedeagus with median part of penis valves expanded; digital spines placed at different levels; digitus elongate.

1. *Omphale acuminaticornis* (Girault) (Figs 9, 12)

Achrysocharella acuminaticornis Girault, 1916b:50.

Omphale acuminaticornis (Girault), Yoshimoto 1978:716.

Diagnosis.—Thoracic dorsum with very strong and raised reticulation; clypeus narrow, 1.7× as wide as long, slightly paler than surrounding frons in female, pale nonmetallic in male; flagellomeres long and slender in female.

Distribution.—Campeche, Oaxaca, Veracruz. 9 females. New record for Mexico.

2. *Omphale elevata* Hansson (Figs 8, 92)

Omphale elevata Hansson, 1996b:27.

Diagnosis.—Thoracic dorsum with strong and raised reticulation; clypeus wide, 2.3× as wide as long, slightly paler than surrounding frons in female, pale nonmetallic in male; flagellomeres comparatively short in female.

Distribution.—Chiapas, Colima, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla, Tamaulipas, Veracruz. 77 females, 48 males. New record for Mexico.

3. *Omphale lanceolata* n.sp.

Type material.—Holotype female labelled "Tamaulipas, 2mi W Gomez Farias, 5.vii.1986, G. Zolnerowich" (USNM).

Etymology.—Name referring to lanceolate gaster in females of this species.

Diagnosis.—Thoracic dorsum with strong and raised reticulation; clypeus dark and metallic in female (male un-

known); last tergite of female gaster elongate, $4.2\times$ as long as wide at base; dorsellum hidden under scutellum, not visible in dorsal view.

Description (female).—Length of body = 2.4 mm.

Colour: Scape pale with apical tip infusate; pedicel and flagellum dark. Frons and vertex metallic greenish-blue. Clypeus dark and metallic. Mesoscutum and scutellum with weak metallic bluish-purple tinges. Propodeum metallic bluish-green. Coxae dark and metallic; femora dark; tibiae and tarsi pale. Wings infusate. Petiole pale. Gaster with 1st tergite metallic bluish-green, remaining tergites golden-green.

Head: Antenna as in *O. stigmatis* (Fig. 10). Frons and vertex with weak superficial reticulation. Clypeus transverse, $1.7\times$ as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove almost straight. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with strong reticulation. Forewing speculum open below; without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster elongate, last tergite long, $4.2\times$ as long as wide at base.

4. *Omphale marylandensis* (Girault)

Rhynopeltomyia marylandensis Girault, 1916b:39.
Achrysocharis athanasii Girault, 1917c:3, syn.

Hansson (1996b:28)

Omphale marylandensis (Girault), Schauff 1991:75.

Diagnosis.—Thoracic dorsum with weak and raised reticulation; clypeus distinctly to only slighter paler than surrounding frons in female, pale nonmetallic in male.

Distribution.—Guerrero, Michoacan. 2 females. New record for Mexico.

5. *Omphale metallica* n.sp.

(Figs 6, 7, 101)

Type material.—Holotype male labelled "Chiapas, Ocozacoautla, 8.viii.1990, 1800–2200', J.B. Woolley, 90/055B" (USNM). Paratypes: 6 females 4 males with same label data as holotype (3 females 2 males

LUZM, 3 females 2 males TAMU); 3 males "Chiapas, Municipal Tenejapa Paraje Yashanal, 5200–5800', 4.viii.1990, J.B. Woolley, 90/052" (1 male LUZM, 2 males TAMU); 1 female "Chiapas, 100km SE Palenque, Bonanpak, 9.vii.1983, 230m, M. Kaulbars" (CNC); 1 male "Chiapas, San Cristobal las Casas, 1–12.vii.1969, 7200'" (CNC); 1 female "Campeche, 10km W Xpujil, Chicanna, 12–14.vii.1983, 300m, M. Kaulbars" (CNC); 1 female 1 male "Colima, 9mi N Comala, 12.vii.1984, J.B. Woolley, 84/030" (TAMU); 1 male "Guerrero, 18.2mi S Iguala, 5.vii.1987, 3800', J.B. Woolley, 87/013" (TAMU); 2 females "Guerrero, 17mi E Tixtla, 11.vii.1985, J.B. Woolley and G. Zolnerowich, 85/050" (LUZM); 1 female 1 male "Guerrero, 7mi W Chilapa, 16.vii.1984, J.B. Woolley, 84/036" (TAMU); 1 male "Guerrero, 15mi SW Chichihualco, 15.vii.1984, J.B. Woolley, 84/034" (LUZM); 2 females "Guerrero, 6mi NE Tixtla de Guerrero, 16.vii.1984, J.B. Woolley, 84/035" (LUZM); 1 female "Guerrero, 2mi E Ocotito, 11.vii.1985, J.B. Woolley, 85/048" (TAMU); 1 female 1 male "Guerrero, 32mi SE Petatlan, 10.vii.1985, J.B. Woolley, 85/047" (TAMU); 1 female 5 males "Guerrero, 5mi NW El Ocotito, 7.vii.1987, 2500–3200', R. Wharton", 1 male gaster on slide (no. 271) (3 males LUZM, 1 female 2 males TAMU); 1 male "Guerrero, 2mi NE Cacahuamilpa, 4.vii.1987, 5300', R. Wharton" (TAMU); 1 male "Guerrero, 6mi E Xochipala, 5.vii.1987, 3500', J.B. Woolley, 87/014" (LUZM); 1 female 3 males "Jalisco, 16mi S Autlan, 8.vii.1984, J.B. Woolley, 84/025" (1 female 1 male LUZM, 2 males TAMU); 1 female "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (TAMU); 10 females 1 male "Oaxaca, 3.9mi NE San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley, 85/067" (5 females LUZM, 5 females 1 male TAMU); 2 females "Oaxaca, 15.1mi N San Gabriel Mixtepec, 11.vii.1987, 3850', J.B. Woolley and G. Zolnerowich, 87/031" (LUZM, TAMU); 9 females "Oaxaca, 4.4mi S San

Table 1. Ratios of Mexican *Onophale*. Abbreviations: HE = height of eye; HW = height of wing; LA = length of aedeagal apodeme; LD = length of digitus; LG = length of gaster; LM = length of marginal vein; LP = length of penis valves; LW = length of wing; MM = length of mesosoma; MS = malar space; OOL = shortest distance between compound eye and lateral ocellus; PM = length of postmarginal vein; POL = distance between lateral ocelli; ST = length of stigmal vein; WD = width of digitus; WH = width of head; WM = width of mouth opening; WT = width of thorax, measured across hind part of mesoscutum. Unless otherwise stated ratios are from both sexes.

<i>Onophale</i> species	WM/HE ♀	WM/HE ♂	MS/HE ♀	MS/HE ♂	POL/OOL	WH/ST	PM/ST	LW/LM
<i>acuminaticornis</i> (Gir.)	0.8–1.0	1.1	0.2–0.3	0.4	1.4–1.8	1.3	1.4–2.3	1.8–1.9
<i>elevata</i> Hansson	1.1	1.1–1.3	0.2–0.3	0.2–0.3	1.6–2.3	1.3	1.2–2.0	1.6–1.7
<i>lanceolata</i> n. sp.	0.8	—	0.3	—	1.4	1.2	1.9	1.7
<i>marylandensis</i> (Gir.)	0.8–1.2	1.0–1.1	0.2–0.3	0.3–0.4	1.6–2.0	1.3	1.1–2.0	1.7–1.9
<i>metallica</i> n.sp.	0.7	0.8	0.2	0.3	2.2	1.4	1.4	1.8
<i>petiolata</i> n.sp.	—	1.0	—	0.3	1.8	1.2	1.6	1.7
<i>stigmatis</i> n.sp.	1.0	—	0.4	—	1.3	1.2	0.8	1.7
<i>whartoni</i> n.sp.	0.8	1.2	0.2	0.2	1.8	1.3	1.2	1.8
<i>woolleyi</i> n.sp.	1.1	1.4	0.3	0.3	1.8	1.3	1.3	1.8
<i>cherana</i> n.sp.	1.0	1.3	0.2	0.3	1.5	1.1	1.1	1.7
<i>flaviscutellum</i> n.sp.	0.7	1.0	0.1	0.2	0.9	1.3	1.3	1.7
<i>australis</i> Hansson	1.0–1.1	0.8–1.3	0.2–0.3	0.3–0.4	1.6–2.3	1.1	0.6–0.7	1.9–2.1
<i>carinata</i> n.sp.	1.1	1.0	0.3	0.4	1.4	1.3	0.4	2.0
<i>divina</i> (Gir.)	0.7–1.0	0.8–1.1	0.3	0.2–0.5	1.5–2.8	1.2	0.4–0.8	1.9–2.0
<i>obscura</i> n.sp.	0.9	1.0	0.4	0.4	1.3	1.1	0.9	2.1
<i>petallana</i> n.sp.	0.9	1.1	0.3	0.4	1.9	1.2	0.4	2.1
<i>poeta</i> (Gir.)	1.2–1.3	1.2–1.5	0.3–0.4	0.2–0.5	2.0–2.6	1.2	0.5–0.7	2.0–2.1
<i>tria</i> n.sp.	1.0	1.0	0.2	0.3	1.4	1.1	0.5	2.1
<i>triangulata</i> n.sp.	1.1	—	1.1	—	1.4	1.4	0.9	1.8
<i>vinacea</i> Hansson	0.6–0.9	0.9–1.1	0.3	0.3–0.5	1.1–1.7	1.3	0.5–0.7	1.9–2.1
<i>foveata</i> n.sp.	0.7	0.6	0.1	0.2	1.3	1.2	1.2	2.0
<i>notaula</i> n.sp.	0.6	1.2	0.1	0.2	1.8	1.2	1.0	1.6
<i>acuminativentris</i> (Gir.)	0.9–1.2	0.8–1.1	0.2–0.3	0.2–0.4	1.7–2.1	1.1	1.0–1.1	1.9–2.0
<i>fulgida</i> n.sp.	1.0	1.2	0.3	0.3	1.3	1.2	1.5	2.0
<i>gracilis</i> n.sp.	1.3	—	0.3	—	1.7	1.3	0.6	2.2
<i>masneri</i> Hansson	1.3–1.4	1.2	0.3	0.4	1.2–1.8	1.2	0.5–0.9	2.2
<i>obscurinotata</i> (Gir.)	1.1–1.4	1.3–1.5	0.3–0.4	0.3–0.4	1.4–2.8	1.1	0.6–0.8	2.0–2.1
<i>pallida</i> n.sp.	1.1	0.9	0.3	0.2	1.7	1.3	1.2	2.0
<i>angusticornis</i> n.sp.	1.2	—	0.3	—	1.6	1.1	0.7	1.9
<i>cumbrensis</i> n.sp.	—	1.1	—	0.4	2.0	1.2	1.1	1.9
<i>oriampila</i> n.sp.	1.3	—	0.3	—	1.4	1.3	0.8	1.9
<i>scutellata</i> (Gir.)	1.2–1.4	1.0–1.4	0.2–0.3	0.2–0.3	1.4–2.3	1.3	0.6–1.2	1.8–2.0
<i>vulgaris</i> Hansson	1.0	1.0–1.4	0.2–0.4	0.2–0.3	1.5–2.3	1.2	0.6–1.3	1.8–2.0
<i>zolnerowichi</i> n.sp.	—	1.0	—	0.2	2.0	1.4	0.9	1.8
<i>fossata</i> n.sp.	0.6	—	0.2	—	1.7	1.3	0.9	1.8
<i>semiglobosa</i> Hansson	0.7–0.8	0.7–0.9	0.1–0.2	0.1–0.2	1.2–1.6	1.4	1.7–2.5	1.7–1.8
<i>uruapana</i> n.sp.	1.0	1.1	0.2	0.3	1.2	1.2	1.4	1.7
<i>valida</i> n.sp.	0.9	—	0.2	—	1.2	1.1	1.0	1.6
<i>dentata</i> n.sp.	0.7	0.7	0.2	0.2	2.3	1.5	1.1	1.8
<i>erginns</i> (Walker)	0.9–1.1	0.9–1.1	0.2–0.4	0.2–0.4	1.8–2.6	1.3	0.7–1.2	1.8–1.9
<i>indistincta</i> n.sp.	1.1	1.2	0.3	0.3	1.7	1.1	1.0	1.9
<i>nita</i> n.sp.	1.2	—	0.2	—	1.2	1.3	1.5	1.7
<i>sola</i> n.sp.	1.1	1.1	0.2	0.3	1.9	1.3	1.0	1.8
<i>tempora</i> n.sp.	1.7	1.5	0.2	0.3	1.1	1.3	2.0	1.7

Table 1. Extended.

LW/HW	LA/LP	LD/WD	MM/LG α	MM/LG δ
1.7-1.9	—	—	0.9	0.9-1.0
1.7-1.8	0.8	5.8	0.8	0.8-0.9
2.1	—	—	0.4	—
1.8-2.1	—	—	0.5-0.8	0.7-1.0
1.7	0.7	5.8	0.6-0.8	0.7-0.9
1.9	0.9	4.9	—	0.7-0.9
1.9	—	—	0.5-0.6	—
1.8	0.8	3.8	0.6-0.7	0.7-1.0
—	0.8	5.8	0.5-0.6	0.8-0.9
2.4	1.0	1.2	0.6-0.7	0.6-0.8
2.3	0.9	1.2	0.5-0.6	0.6-0.7
1.7-1.9	0.5	5.5	0.6-0.8	0.7-0.9
1.8	0.8	3.7	0.6-0.7	0.8
1.8-2.0	0.7	7.0	0.5-0.7	0.7-0.8
—	—	2.8	0.4	0.7
1.8	0.9	2.8	0.6-0.7	1.0-1.2
1.7-1.8	0.9	2.0	0.5-0.7	0.7-0.9
—	0.6	9.0	0.6-0.7	0.7-0.8
1.8	—	—	0.5	—
2.0-2.1	1.0	2.7	0.6-0.7	0.8-0.9
1.9	0.9	2.0	0.7-0.8	0.7-0.8
1.3	0.8	3.0	0.7-0.9	0.8-1.0
1.6-1.9	1.0	0.5	0.4-0.5	0.8-1.0
1.8	1.0	0.5	0.7-0.9	0.7-0.8
—	—	—	0.7	—
2.2	—	—	0.6	0.8
1.6-1.8	1.0	0.4	0.4-0.7	0.7-0.9
1.9	0.9	0.5	0.6	0.8-1.2
1.8	—	—	0.6-0.7	—
1.9	0.8	1.5	—	0.8-0.9
1.7	—	—	0.7-0.9	—
1.6-1.7	0.8	0.7	0.5-1.0	0.7-1.0
1.5-1.8	0.8	0.7	0.4-0.8	0.7-1.0
—	0.6	2.3	—	0.8-0.9
2.2	—	—	0.6	—
1.9-2.6	0.8	2.9	0.5-0.6	0.7-0.9
—	0.8	4.0	0.5-0.7	0.7-0.8
2.3	—	—	0.5	—
1.9	1.1	1.0	0.5-0.7	0.7-0.8
1.8-2.0	1.3	1.0	0.5-0.6	0.7-0.9
2.2	0.9	1.0	0.5-0.8	0.7
—	—	—	0.4	—
1.7	0.7	2.8	0.6-0.8	0.7-0.9
2.4	0.6	1.5	0.6	0.6-1.0

Table 2. Autapomorphies for species groups of *Omphale*.

Species group	Derived character states
<i>bicincta</i> group	Aedeagus with median part of penis valves expanded (Fig. 112)
<i>cherana</i> group	Midlobe of mesoscutum with 1 pair of setae; volsellar setae short and rather weak, placed close to apex of phallobase (Fig. 94)
<i>divina</i> group	Volsellar setae placed apically on phallobase (Figs 96-99)
<i>notaula</i> group	Notauli complete and deep throughout; digitus with concavity in basal outer half (Fig. 103)
<i>obscurinotata</i> group	Clypeus poorly delimited (Figs 51-53)
<i>scutellata</i> group	Inner apical corner of paramere drawn out (Fig. 105); clypeus with rounded sides (Figs 54-56)
<i>semiglobosa</i> group	Forewing long and narrow

Table 3. Apomorphies within *Omphale*, excluding autapomorphies for the genus and the species groups.

No	Character	Derived character state
1	Frontal cross-ridge	Present (Fig. 1)
2	Volsellar setae, placement	Placed at different levels (Figs 103-105, 109)
3	Digital spines, placement	Placed at different levels (Figs 92, 101, 106)
4	Digitus, shape	Elongate (e.g. Figs 93, 100-102)
5	Clypeus	Without upper border (Figs 51-53, 88, 89)
6	Sensilla ampullacea, shape	Elongate and asymmetric (type III sensu Hansson 1996b)
7	Arrangement of setae on male flagellomeres	Verticillate (i.e. with setae confined to a basal whorl on each flagellomere) (e.g. Fig. 5)

Table 4. Character matrix for species groups of *Omphale*. 0 = plesiomorphic, 1 = apomorphic. Character 8 is size of volsellar setae: 0 is thin setae, 1 is enlarged setae. *Ascodes* Förster is used as outgroup.

	1	2	3	4	5	6	7	8
<i>Ascodes</i>	0	0	0	0	0	0	0	0
<i>acamias</i> group	1	0	0	0	1	0	0	1
<i>bicincta</i> group	1	0	1	1	0	0	1	1
<i>cherana</i> group	0	0	0	0	0	1	0	1
<i>divina</i> group	0	0	0	1	0	0	1	1
<i>notaula</i> group	0	1	0	1	0	1	1	1
<i>obscurinotata</i> group	0	0	0	0	0	0	0	1
<i>salicis</i> group	1	1	0	0	0	0	1	1
<i>scutellata</i> group	1	1	0	0	0	0	1	1
<i>semiglobosa</i> group	0	0	1	1	0	1	0	1
<i>versicolor</i> group	1	0	0	0	1	0	0	1

Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (5 females LUZM, 4 females TAMU); 5 females 3 males "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (2 females 2 males LUZM, 3 females 1 male TAMU); 2 females 8 males "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068" (1 female 4 males LUZM, 1 female 4 males TAMU); 3 males "Oaxaca, 4.4mi NE San Pedro Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/065" (1 male LUZM, 2 males TAMU); 1 female 4 males "Oaxaca, 8mi NE El Punto, 18.vii.1985, J.B. Woolley and G. Zolnerowich, 85/074" (1 female 2 males LUZM, 2 males TAMU); 1 female 2 males "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (TAMU); 2 males "Puebla, 4.7mi SW La Cumbre, 23.vii.1987, 5100', J.B. Woolley, 87/055" (LUZM, TAMU); 1 female 2 males "Tamaulipas, Reserva El Cielo Gomez Farias, 28.vii.1993, 450m, J.B. Woolley, 93/025" (LUZM); 1 male "Tamaulipas, Reserva El Cielo San Jose, 29.vii.1993, J.B. Woolley, 93/033" (TAMU); 1 male "Tamaulipas, Reserva El Cielo Alta Cimas, 30.vii.1993, 3100', J.B. Woolley and K. Wikse, 93/035" (TAMU); 1 female 2 males "Veracruz, 3mi

E Huatusco, 23.vii.1984, J.B. Woolley, 84/049a" (LUZM); 1 male "Veracruz, 11mi S Misantla, 24.vii.1984, J.B. Woolley, 84/051" (TAMU); 1 female "Veracruz, 3mi NE Huatusco, 22.vii.1985, J.B. Woolley, 85/084" (TAMU); 1 male "Veracruz, Catemaco, 31.vii.1983, M. Kaulbars" (CNC).

Etymology.—Name referring to metallic clypeus.

Diagnosis.—Thoracic dorsum with weak and superficial to strong raised reticulation; clypeus dark and metallic, as dark and shiny as frons in both sexes.

Description.—Length of body female = 1.2–1.6 mm, male = 0.9–1.3 mm.

Colour: Scape pale with apical $\frac{1}{4}$ infusate; pedicel and flagellum dark. Female frons below cross-groove golden-red, above cross-groove golden-green; entire male frons metallic bluish-green or bluish-purple. Clypeus dark and metallic, as dark and shiny as frons. Vertex golden-red or golden-green. Mesoscutum and scutellum golden-green, golden-red, golden-purple or metallic bluish-green. Dorsellum golden-red. Propodeum golden-green or metallic bluish-green. Coxae dark and metallic, pale in a few specimens; femora infusate to pale; tibiae pale; tarsi infusate to pale. Wings hyaline, or with infusate spot below stigmal vein, or with infusate spot below stigmal vein and with infusate stripe below median marginal vein reaching to hind margin of wing. Petiole pale to dark. Gaster with 1st tergite metallic bluish-green or golden-green, remaining tergites golden-purple.

Head: Antennae as in Figs 6, 7. Frons and vertex smooth and shiny or with weak superficial reticulation. Clypeus transverse, $1.4\times$ as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove V-shaped. Occipital margin with weak edge.

Mesosoma: Mesoscutum and scutellum with weak and superficial to strong reticulation. Dorsellum small, flat and smooth. Forewing speculum open below (closed in

Table 5. Mexican (M) and Nearctic (N) species of *Omphale*. Species also occurring in the Palearctic region is marked with a P.

Species	Group	Distribution
<i>acamas</i> (Walker)	<i>acamas</i>	(N, P)
<i>acuminaticornis</i> (Girault)	<i>bicincta</i>	(M, N)
<i>acuminativentris</i> (Girault)	<i>obscurinotata</i>	(M, N)
<i>angusticornis</i> n.sp.	<i>scutellata</i>	(M)
<i>arecopurpurea</i> Hansson	<i>acamas</i>	(N)
<i>australis</i> Hansson	<i>divina</i>	(M, N)
<i>bicincta</i> Ashmead	<i>bicincta</i>	(N)
<i>brevicornis</i> Hansson	<i>acamas</i>	(N)
<i>carinata</i> n.sp.	<i>divina</i>	(M)
<i>cherana</i> n.sp.	<i>cherana</i>	(M)
<i>clavata</i> Hansson	<i>scutellata</i>	(N)
<i>clypealba</i> Hansson	unplaced	(N)
<i>clypeolata</i> Hansson	<i>scutellata</i>	(N)
<i>cumbrensis</i> n.sp.	<i>scutellata</i>	(M)
<i>dentata</i> n.sp.	unplaced	(M)
<i>deplanata</i> Hansson	unplaced	(N)
<i>divina</i> (Girault)	<i>divina</i>	(M, N)
<i>elevata</i> Hansson	<i>bicincta</i>	(M, N)
<i>elongata</i> n.sp.	<i>divina</i>	(N)
<i>erginus</i> (Walker)	unplaced	(M, N, P)
<i>exodonta</i> Hansson	<i>scutellata</i>	(N)
<i>exserta</i> Hansson	<i>obscurinotata</i>	(N)
<i>filicornis</i> Hansson	unplaced	(N)
<i>flavicephala</i> Hansson	<i>divina</i>	(N)
<i>flavifacies</i> Hansson	unplaced	(N)
<i>flavifrons</i> Hansson	<i>divina</i>	(N)
<i>flaviscutellum</i> n.sp.	<i>cherana</i>	(M)
<i>fossata</i> n.sp.	<i>semiglobosa</i>	(M)
<i>foveata</i> n.sp.	<i>notaula</i>	(M)
<i>fulgida</i> n.sp.	<i>obscurinotata</i>	(M)
<i>gracilicornis</i> (Hansson)	<i>versicolor</i>	(N)
<i>gracilis</i> n.sp.	<i>obscurinotata</i>	(M)
<i>indistincta</i> n.sp.	unplaced	(M)
<i>laevigata</i> Hansson	unplaced	(N)
<i>lanceolata</i> n.sp.	<i>bicincta</i>	(M)
<i>longiseta</i> Hansson	<i>versicolor</i>	(N)
<i>marginalis</i> Hansson	<i>bicincta</i>	(N)
<i>marylandensis</i> (Girault)	<i>bicincta</i>	(M, N)
<i>masneri</i> Hansson	<i>obscurinotata</i>	(M, N)
<i>melica</i> Hansson	<i>obscurinotata</i>	(N)
<i>metallica</i> n.sp.	<i>bicincta</i>	(M)
<i>nita</i> n.sp.	unplaced	(M)
<i>nitida</i> Hansson	<i>divina</i>	(N)
<i>notaula</i> n.sp.	<i>notaula</i>	(M)
<i>obscura</i> n.sp.	<i>divina</i>	(M)
<i>obscurinotata</i> (Girault)	<i>obscurinotata</i>	(M, N)
<i>ocelliparva</i> Hansson	<i>acamas</i>	(N)
<i>oculiparva</i> Hansson	<i>versicolor</i>	(N)
<i>oriampila</i> n.sp.	<i>scutellata</i>	(M)
<i>orilata</i> Hansson	<i>scutellata</i>	(N)
<i>pallida</i> n.sp.	<i>obscurinotata</i>	(M)
<i>pedicellata</i> Hansson	<i>scutellata</i>	(N)

Table 5. Continued.

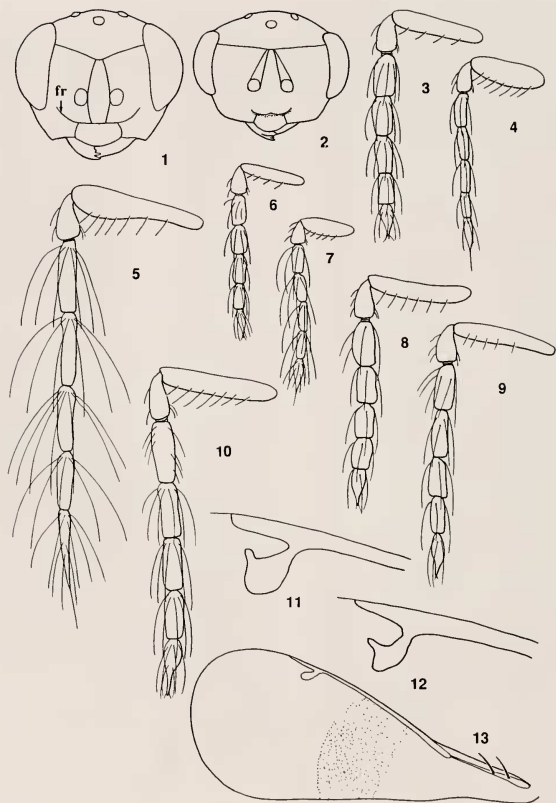
Species	Group	Distribution
<i>petatlana</i> n.sp.	<i>divina</i>	(M)
<i>petiolata</i> n.sp.	<i>bicincta</i>	(M)
<i>pilosa</i> Hansson	<i>semiglobosa</i>	(N)
<i>poeta</i> (Girault)	<i>divina</i>	(M, N)
<i>prasina</i> Hansson	unplaced	(N)
<i>purpurea</i> Hansson	<i>versicolor</i>	(N)
<i>radialis</i> (Thomson)	<i>salicis</i>	(N, P)
<i>salicis</i> Haliday	<i>salicis</i>	(N, P)
<i>scutellata</i> (Girault)	<i>scutellata</i>	(M, N)
<i>semiglobosa</i> Hansson	<i>semiglobosa</i>	(M, N)
<i>setosa</i> Hansson	<i>bicincta</i>	(N)
<i>sola</i> n.sp.	unplaced	(M)
<i>speciosa</i> Hansson	<i>semiglobosa</i>	(N)
<i>stigmatis</i> n.sp.	<i>bicincta</i>	(M)
<i>straminea</i> Hansson	<i>salicis</i>	(N)
<i>sublacvis</i> (Boucek)	<i>scutellata</i>	(N)
<i>taborskyi</i> (Boucek)	<i>bicincta</i>	(N)
<i>tempora</i> n.sp.	unplaced	(M)
<i>theana</i> (Walker)	<i>salicis</i>	(N, P)
<i>triangulata</i> n.sp.	<i>divina</i>	(N)
<i>triclava</i> Hansson	<i>salicis</i>	(N)
<i>tria</i> n.sp.	<i>divina</i>	(M)
<i>uruapana</i> n.sp.	<i>semiglobosa</i>	(M)
<i>valida</i> n.sp.	<i>semiglobosa</i>	(M)
<i>varia</i> (Hansson)	unplaced	(N)
<i>versicolor</i> (Nees)	<i>versicolor</i>	(N, P)
<i>vinacea</i> Hansson	<i>divina</i>	(M, N)
<i>viridiscutellum</i> (Girault)	<i>versicolor</i>	(N)
<i>vulgaris</i> Hansson	<i>scutellata</i>	(M, N)
<i>wahl</i> Hansson	<i>bicincta</i>	(N)
<i>whartoni</i> n.sp.	<i>bicincta</i>	(M)
<i>woolleyi</i> n.sp.	<i>bicincta</i>	(M)
<i>zolnerowichi</i> n.sp.	<i>scutellata</i>	(M)

2 males); without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster ovate. Male genitalia (Fig. 101) with outer digital spine narrow and slightly curved; paramere with two setae.

6. *Omphale petiolata* n.sp.
(Figs 5, 102)

Type material.—Holotype male labelled "Guerrero, 6.6mi SW Filo de Caballo, 12.vii.1985, J.B. Woolley, 85/051" (USNM). Paratypes: 3 males with same label data as holotype, 1 gaster on slide (no. 270) (1 male LUZM, 2 males TAMU); 2 males "Guerrero, 5mi SW Filo de Caballo,



Figs. 1-13. 1-2. Head, frontal. 1, *woolleyi*, female (fr = frontal cross-ridge). 2, *whartoni*, male. 3-10. Antennae. 3, *whartoni*, female. 4, Ditto, male. 5, *petiolata*, male. 6, *metallica*, female. 7, Ditto, male. 8, *elevata*, female. 9, *acuminaticornis*, female. 10, *stigmatis*, female. 11-12. Stigmatal vein. 11, *stigmatis*. 12, *acuminaticornis*. 13. Forewing, *whartoni*.

17.vii.1984, J.B. Woolley, 84/037a", 1 gaster on slide (no. 277) (LUZM, TAMU); 1 male "Guerrero, 6.2mi SW Xochipala, 13.vii.1985, J.B. Woolley, 85/056" (TAMU); 1 male "Chiapas, San Cristobal Reserva Huitepec, 7300-7500', 3.viii.1990, J.B. Woolley, 90/051A" (LUZM); 4 males "Oaxaca, 10.7mi N Guelatao de Juarez, 17.vii.1987, 8500', R. Wharton" (2 males LUZM, 2 males TAMU); 2 males "Oaxaca, Llano des Flores, 17.vii.1987, 8900', R. Wharton", 1 gaster on slide (no. 272) (LUZM, TAMU); 1 male "Oaxaca, 6.1mi NE Mitla, 20.vii.1985, J.B. Woolley, 85/077" (TAMU); 1 male "Oaxaca, 1.4mi NE La Cumbre, 18.vii.1985, J.B. Woolley and G. Zolnerowich, 85/075" (LUZM).

Etymology.—Name referring to elongate petiole in males of this species.

Diagnosis.—Thoracic dorsum with weak to strong raised reticulation; clypeus dark with weak metallic tinges to white, but always paler than surrounding frons; male scape long, narrow at base (Fig. 5); male petiole elongate, 1.0–1.3× as long as wide.

Description (male).—Length of body = 1.2–2.0 mm.

Colour: Scape pale with apical ½ dark and metallic; pedicel and flagellum dark. Frons metallic bluish-green or golden-green. Clypeus dark with weak metallic tinges, to white. Vertex golden-purple. Mesoscutum and scutellum golden-green or metallic bluish-green. Dorsellum golden-green. Propodeum golden-green. Fore and mid coxae dark and metallic, hind coxa pale with dark base, to all coxae pale; femora dark with pale stripes on either side, to completely pale; tibiae pale with dark stripe laterally; tarsi infusate. Forewing with infusate spot below stigmal vein and with infusate stripe below median marginal vein reaching to hind margin of wing, to completely hyaline. Petiole pale to dark. Gaster with 1st tergite metallic bluish-green, remaining tergites golden-purple.

Head: Antenna as in Fig. 5. Frons and vertex smooth and shiny, inside ocellar

triangle with weak superficial reticulation. Clypeus transverse, 2.2× as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove almost straight. Occipital margin with weak edge.

Mesosoma: Mesoscutum and scutellum with strong to weak reticulation. Dorsellum small, flat and smooth. Forewing speculum open or closed below; without stigmal hairline and with radial cell hairy.

Metasoma: Petiole elongate, 1.0–1.3× as long as wide. Male genitalia (Fig. 102) with outer digital spine stout; paramere with two setae.

7. *Omphale stigmalis* n.sp.

(Figs 10, 11)

Type material.—Holotype female labelled "Oaxaca, Llano de las Flores, 17.vii.1987, 8900', R. Wharton" (USNM). Paratypes: 2 females with same label data as holotype (LUZM, TAMU).

Etymology.—Name referring to enlarged stigmal vein in this species.

Diagnosis.—Thoracic dorsum with strong dense reticulation, on scutellum with elongate meshes which therefore appears striate; clypeus dark and metallic; stigmal vein enlarged.

Description (female).—Length of body = 2.0–2.9 mm.

Colour: Scape pale with apical tip infusate; pedicel and flagellum dark. Frons metallic bluish-purple. Clypeus dark and metallic. Vertex metallic bluish-green. Mesoscutum and scutellum metallic bluish-green. Dorsellum metallic bluish-green. Propodeum golden-green. Coxae dark and metallic; femora pale, hind femur with apical ½ infusate; tibiae pale; tarsi pale to infusate. Forewing with infusate spot below stigmal vein and with infusate stripe below median marginal vein reaching to hind margin of wing (infuscation weak in one specimen). Petiole pale. Gaster with 1st tergite metallic bluish-green, remaining tergites golden-green.

Head: Antenna as in Fig. 10. Frons and

vertex with weak reticulation. Clypeus transverse, $1.7\times$ as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove almost straight. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with strong and dense reticulation, on scutellum with elongate meshes. Dorsellum small, flat and smooth. Forewing speculum open below; without stigmal hairline and with radial cell hairy; stigmal vein enlarged.

Metasoma: Female gaster elongate.

8. *Omphale whartoni* n.sp.

(Figs 2-4, 13, 100)

Type material.—Holotype female labelled "Guerrero, 2.1mi NE Cacahuamilpa, 4.vii.1987, 5250', J.B. Woolley, 87/011" (USNM). Paratypes: 1 female 2 males with same label data as holotype, 1 male gaster on slide (no. 274) (1 male LUZM, 1 female 1 male TAMU); 3 females "Guerrero, 2mi E Ocotito, 11.vii.1985, J.B. Woolley, 85/048" (1 female LUZM, 2 females TAMU); 1 female 1 male "Guerrero, 5mi NW El Ocotito, 7.vii.1987, 2500-3200', R. Wharton", male gaster on slide (no. 281) (LUZM); 1 female 1 male "Guerrero, 2mi NE Cacahuamilpa, 4.vii.1987, 5300', R. Wharton" (TAMU); 1 male "Guerrero, 2mi NE Cacahuamilpa, 19.vii.1984, 5000', J.B. Woolley, 84/043" (LUZM); 1 female "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (TAMU); 1 female 1 male "Jalisco, 8.3mi S Autlan on highway 80, 8.vii.1984, J.B. Woolley, 84/024" (TAMU); 1 male "Jalisco, 16mi S Autlan, 8.vii.1984, J.B. Woolley, 84/025", gaster on slide (no. 266) (LUZM); 1 male "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032", gaster on slide (no. 279) (TAMU).

Etymology.—Name referring to collector of some of the type material of this species.

Diagnosis.—Thoracic dorsum with strong raised reticulation in female, weak raised reticulation in male; clypeus trans-

verse ($2\times$ as wide as long), distinctly convex, yellowish-brown in female, white in male; female forewing with an infusate area below marginal vein, infuscation reaching to hind margin of wing (Fig. 13); male scape widest at base (Fig. 4), pedicel and flagellum metallic bluish-purple.

Description.—Length of body female = 1.3-2.0 mm, male = 1.1-1.5 mm.

Colour: Scape pale with apical $\frac{1}{2}$ infusate in female, pale with apical tip metallic in male; pedicel and flagellum dark. Frons metallic bluish-green, golden-green or golden-red in female, metallic bluish-green in male. Clypeus yellowish-brown in female, white in male. Vertex golden-red or golden-green. Mesoscutum and scutellum golden-purple in female, golden-green or golden-red in male. Dorsellum golden-purple in female, golden-red in male. Propodeum golden-green. Coxae dark and metallic in female, pale in male; femora dark in female, pale in male (some specimens with apical $\frac{1}{3}$ of hind femur dark); tibiae and tarsi pale. Forewing with infusate stripe below median marginal vein reaching to hind margin of wing in female, with weak median infusate stripe or completely hyaline in male. Petiole pale. Gaster with 1st tergite metallic bluish-green or golden-green, remaining tergites golden-purple.

Head: Antennae as in Figs 3, 4. Frons and vertex with weak reticulation in female, smooth and shiny in male. Clypeus transverse, $2\times$ as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove almost straight. Occipital margin with weak edge.

Mesosoma: Mesoscutum and scutellum with strong reticulation in female, weak in male. Dorsellum small, flat and smooth. Forewing speculum open below; without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster ovate. Male genitalia (Fig. 100) with outer digital spine stout; paramere with two setae.

9. *Omphale woolleyi* n.sp.

(Figs 1, 93, 112)

Type material.—Holotype female labelled "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (USNM). Paratypes: 9 females with same label data as holotype (4 females LUZM, 5 females TAMU); 8 females "Guerrero, 2mi E Ocotito, 11.vii.1985, J.B. Woolley, 85/048" (4 females LUZM, 4 females TAMU); 1 female "Guerrero, 2mi NE Cacahuamilpa, 4.vii.1987, 5300', R. Wharton" (TAMU); 1 male "Guerrero, 15mi SW Chichihualco, 15.vii.1984, J.B. Woolley, 84/034", gaster on slide (no. 273) (TAMU); 3 male "Guerrero, 2.1mi NE Cacahuamilpa, 4.vii.1987, 5250', J.B. Woolley, 87/011" (2 males LUZM, 1 male TAMU); 1 female "Jalisco, 8.3mi S Autlan on highway 80, 8.vii.1984, J.B. Woolley, 84/024" (LUZM); 2 males "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (LUZM, TAMU); 1 male "Oaxaca, 10.8mi S El Punto, 19.vii.1987, 6100', R. Wharton", gaster on slide (no. 288) (LUZM).

Etymology.—Name referring to collector of some of the type material of this species.

Diagnosis.—Thoracic dorsum with strong raised reticulation in female, weak raised reticulation in male; clypeus dark and metallic, frons laterad of clypeus brownish with weak metallic tinge; forewing hyaline, with speculum closed below and with radial cell bare; inner digital spine more curved than in other males of this group (Fig. 93).

Description.—Length of body female = 1.3–1.7 mm, male = 1.0–1.5 mm.

Colour. Scape pale with apical tip infusate, to completely infusate; pedicel and flagellum dark. Frons metallic greenish-blue or bluish-purple, close to mouth opening laterad of clypeus brownish with weak metallic tinge in female, yellowish-white to infusate in male. Clypeus dark and metallic. Vertex metallic greenish-

blue or golden-green, inside ocellar triangle usually brownish in females, golden-red to golden in males. Mesoscutum, scutellum, dorsellum and propodeum metallic greenish-blue, bluish-purple, golden-green or golden-red. Coxae dark and metallic; femora dark; tibiae and tarsi pale in females, infusate in males. Wings hyaline. Petiole pale. Gaster with 1st tergite metallic greenish-blue or golden-purple, remaining tergites golden-purple.

Head: Antennae as in *O. metallica* (Figs 6, 7). Frons and vertex with weak reticulation in females, weak and superficial reticulation in males. Clypeus transverse, 2× as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove V-shaped. Occipital margin rounded.

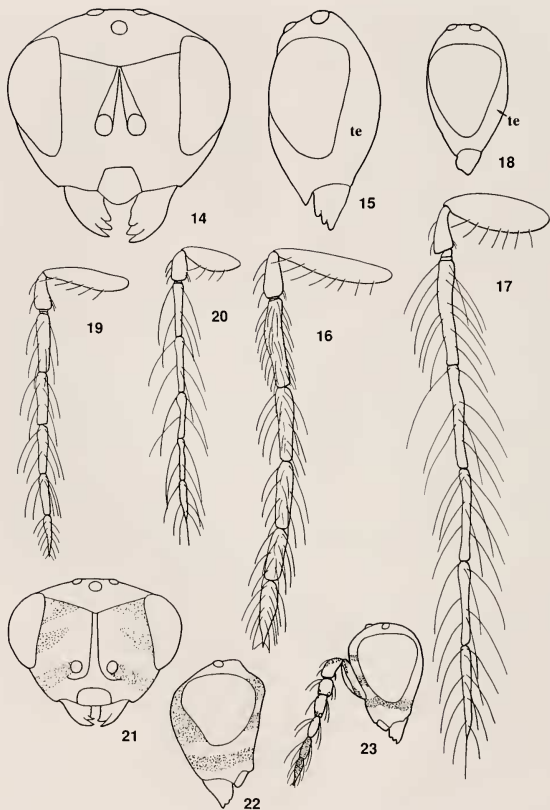
Mesosoma: Mesoscutum and scutellum with strong reticulation in female, weak in male. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster elongate. Male genitalia (Fig. 93) with volsellar ridges U-shaped; inner digital spine more curved than in other species of this group, outer spine stout; paramere with one seta at apex of paramere.

Species group *cherana*

Diagnosis.—Clypeus with upper corners angulate and semicircularly protruding (Fig. 14). Head without frontal cross-ridge. Male flagellomeres with scattered setae (Figs 17, 20). Male genitalia (Fig. 94): volsellar setae short and rather weak, placed close to apex of phallobase; digitus 1.2× as long as wide, inner digital spine larger than outer; paramere with one seta at apex; aedeagus (Fig. 113) stout, aedeagal apodemes 0.9–1.0× as long as penis valves. Flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b). Midlobe of mesoscutum with one pair of setae (posterior pair).

Apomorphies.—Flagellomeres with sen-



Figs. 14-23. 14-17. *cherana*. 14, Head, frontal. 15, Head, lateral. 16, Antenna, female. 17, Ditto, male. 18-20. *flaviscutellum*. 18, Head, lateral. 19, Antenna, female. 20, Ditto, male. 21-22. *triangulata*. 21, Head, frontal. 22, Head, lateral. 23, Head, lateral, *divina*, female. te= temple.

silla ampullacea elongate and asymmetric. Midlobe of mesoscutum with 1 pair of setae. Male genitalia: volsellar setae short and rather weak, placed close to apex of phallobase.

10. ***Omphale cherana* n.sp.**
(Figs 14–17, 94, 113)

Type material.—Holotype female labelled "Michoacan, 6mi N Cheran, 8.vii.1985, J.B. Woolley, 85/034" (USNM). Paratypes: 14 females 10 males with same label data as holotype, 1 male gaster on slide (no. 261) (7 females 5 males LUZM, 7 females 5 males TAMU); 2 males "Michoacan, 2mi S Carapan, 6.vii.1985, J.B. Woolley, 85/031" (LUZM, TAMU); 1 female "Guerrero, 6.6mi SW Filo de Caballo, 12.vii.1985, J.B. Woolley, 85/051" (TAMU).

Etymology.—"From Cheran".

Diagnosis.—Mouth opening as wide as height of eye in female, $1.3\times$ wider than eye in male; temples large (Fig. 15); scutellum in female always dark metallic.

Description.—Length of body female = 1.3–1.9 mm, male = 1.1–1.9 mm.

Colour.—Scape pale with dorsal edge dark; pedicel and flagellum dark, 5th flagellomere partly to completely pale in female. Head golden-green or golden. Mesosoma golden-green, golden or metallic bluish-green. Legs pale, or pale with fore and hind coxae infuscate, femora dark brown, tibiae and tarsi infuscate. Wings hyaline. Petiole pale. Gaster metallic bluish-green.

Head: Antennae as in Figs 16, 17. Frons and vertex with weak engraved reticulation, male vertex sometimes smooth and shiny. Clypeus as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove slightly V-shaped. Occipital margin smoothly rounded.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation; notauli not delimited. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Petiole in male transverse, $0.6\times$ as long as wide. Female gaster ovate.

Remarks.—*O. cherana* and *O. flaviscutellum* both look like species belonging to the *semiglobosa* group (head semiglobose, flagellomeres long and slender—in male with scattered setae—with sensilla ampullacea long and asymmetric, lacking frontal cross-ridge, antenna attached high up—in middle of frons, forewing long). However, the male genitalia of *O. cherana* and *O. flaviscutellum* is quite different from males in the *semiglobosa* group. Other separating characters are: notauli not delimited (delimited in posterior $2/3$ in *semiglobosa* group), midlobe of mesoscutum with only one pair of setae (two pairs in *semiglobosa* group).

11. ***Omphale flaviscutellum* n.sp.**
(Figs 18–20)

Type material.—Holotype female labelled "Oaxaca, 15.1mi N San Gabriel Mixtepec, 3850', 11.vii.1987, J.B. Woolley and G. Zolnerowich, 87/031" (USNM). Paratypes: 6 females with same label data as holotype (3 females LUZM, 3 females TAMU); 6 females "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (3 females LUZM, 3 females TAMU); 1 female "Oaxaca, 19mi S San Miguel Suchixtepec, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/069" (TAMU); 1 female "Oaxaca, 10.8mi S El Punto, 19.vii.1987, 6100', R. Wharton" (LUZM); 2 females "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (LUZM, TAMU); 2 females "Oaxaca, 4.4mi NE San Pedro Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/065" (LUZM, TAMU); 1 male "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (TAMU); 1 female "Campeche, 10km W Xpujil, Chicanna, 12–14.vii.1983, 300m, M. Kaulbars" (CNC); 6 females 1 male from Chiapas, Palenque (3 females 1 male CNC, 3 fe-

males LUZM); 3 females "Chiapas, San Cristobal las Casas, 26.5-3.6.1969" (2 females CNC, 1 female LUZM); 1 female "Guerrero, 2mi N Cacahuamilpa, 19.vii.1984, 5000', J.B. Woolley, 84/043" (LUZM); 2 males "Guerrero, 18.2mi S Iguala, 5.vii.1987, 3000', J.B. Woolley, 87/013", 1 male gaster on slide (no. 259) (LUZM, TAMU); 1 female "Michoacan, 10mi S Uruapan, 7.vii.1985, J.B. Woolley and G. Zolnerowich, 85/037" (TAMU); 1 female "Puebla, 2km N Xicotepac de Juarez, 17.vi.1983, 1070m, M. Kaulbars" (CNC); 2 females "Quintana Roo, 68km SW Chetumal, Kohunlich, 14-17.vii.1983, 160m, M. Kaulbars" (CNC, LUZM); 1 female "Tamaulipas, Reserva El Cielo, Gomez Farias, 450m, 27-30.vii.1993, J.B. Woolley, 93/020" (TAMU); 1 female "Tamaulipas, Reserva El Cielo, Alta Cimas, 3100', 30.vii.1993, J.B. Woolley and K. Wikse, 93/035" (LUZM); 2 females "Veracruz, 3mi E Huatusco, 23.vii.1984, J.B. Woolley, 84/049a" (LUZM, TAMU); 1 female "Veracruz, 11mi S Misantla, 24.vii.1984, J.B. Woolley, 84/051" (TAMU); 1 male "Veracruz, 33km NE Catemaco, 160m, Tuxtla Research Station, 1.vii.1983, M. Kaulbars" (CNC); 6 females "COSTA RICA: Guanacaste, Santa Rosa N.P., SE8C, 26.x-16.xi.1985, D. Janzen, I.D. Gauld" (BMNH, LUZM); 3 females from same locality as previous but collected 18.x-8.xi.1986 (BMNH, LUZM).

Etymology.—"Flaviscutellum" meaning "with yellow scutellum".

Diagnosis.—Mouth opening $0.7\times$ as wide as height of eye in female, $1.0\times$ in male; temples small (Fig. 18); scutellum in female usually yellow nonmetallic.

Description.—Length of body female = 1.1-1.8 mm, male = 0.7-1.1 mm.

Colour.—Scape pale with dorsal edge dark; pedicel and flagellum dark, 4 and 5th flagellomeres partly to completely pale in female. Frons below cross-groove golden-green; frons above cross-groove and vertex metallic bluish-green or golden-green. Mesoscutum usually dark and me-

tallic (bluish-purple or golden-purple), in a few female specimens partly to completely yellow nonmetallic. Scutellum usually yellow nonmetallic with median infuscate spot, in a few specimens dark and metallic (golden-green), always dark and metallic in male. Coxae white, remaining parts of legs weakly infuscate. Wings hyaline. Petiole pale. Gaster golden-purple to yellow nonmetallic.

Head: Antennae as in Figs 19, 20. Frons and vertex with weak engraved reticulation, vertex sometimes smooth and shiny. Clypeus as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove slightly V-shaped. Occipital margin with weak edge.

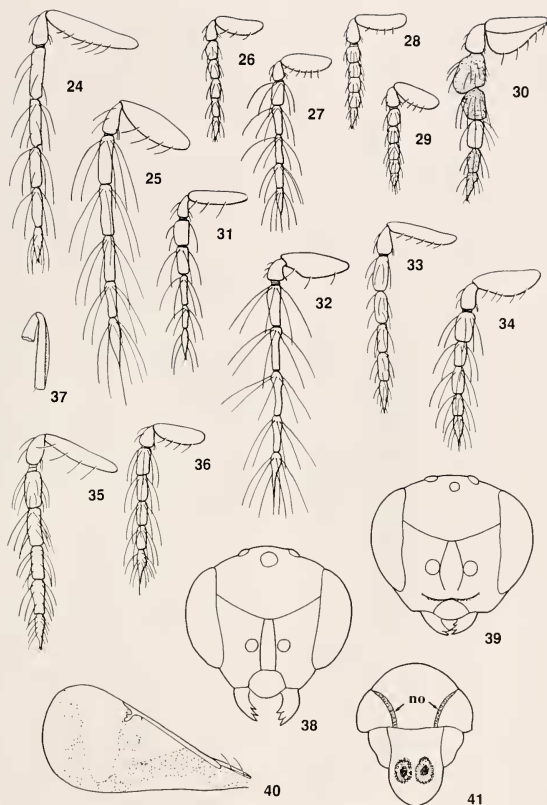
Mesosoma: Mesoscutum and scutellum with fine engraved reticulation; notauli not delimited. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Petiole in male transverse, $0.6\times$ as long as wide. Female gaster ovate.

Species group *divina*

Diagnosis.—Clypeus quadrangular to semicircular, pale yellow non-metallic or dark and metallic. Head without frontal cross-ridge. Male flagellomeres with verticillate setae, i.e. with a single basal whorl of setae on each flagellomere (e.g. Figs 25, 27). Male genitalia (Figs 95-99): volsellar setae long and strong and placed at, or close to, apex of parameres, far above base of volsellar ridges; digitus elongate, at least $3\times$ as long as wide, digital spines equally large, or with inner spine larger than outer spine; paramere with one or two setae; aedeagus (Figs 114-116) long and narrow, aedeagal apodemes $0.5-0.9\times$ as long as penis valves. Flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson 1996b).

Apomorphies.—Male flagellomeres with verticillate setae. Male genitalia: volsellar setae placed apically on phallobase; digitus elongate.



Figs. 24-41. 24-36. Antennae. 24, *obscura*, female. 25, Ditto, male. 26, *petatlana*, female. 27, Ditto, male. 28, *tria*, female. 29, Ditto, male. 30, *triangulata*, female. 31, *vinacea*, female. 32, Ditto, male. 33, *notaula*, female. 34, Ditto, male. 35, *foveata*, female. 36, Ditto, male. 37, Foretibia, lateral, *tria*. 38-39. Head, frontal. 38, *foveata*, female. 39, *notaula*, female. 40, Forewing, *triangulata*. 41, Mesoscutum+scutellum (no= notauli), dorsal, *foveata*.

12. *Omphale australis* Hansson
(Fig. 98)

Omphale australis Hansson, 1996b:34.

Diagnosis.—Head and mesosoma dark and metallic; thoracic dorsum with engraved fine reticulation; scutellum purple; head dark and metallic with large temples; male genitalia with digitus $5.3\times$ as long as wide, volsellar setae almost straight.

Distribution.—Chiapas, Colima, Guerrero, Jalisco, Michoacan, Oaxaca (Hansson 1996).

13. *Omphale carinata* n.sp.
(Figs 99, 116)

Type material.—Holotype female labelled "Colima, 7mi SSW Colima, 9.vii.1984, J.B. Woolley, 84/026a" (USNM). Paratypes: 4 females 1 male with same label data as holotype, male gaster on slide (no. 249) (2 females LUZM, 2 females 1 male TAMU); 1 female "Guerrero, 6mi E Xochipala, 13.vii.1985, J.B. Woolley, 85/054" (TAMU); 1 female "Guerrero, 6mi E Xochipala, 6.vii.1987, J.B. Woolley, 87/016" (LUZM); 1 female "Guerrero, 11.2mi N Iguala, 5.vii.1987, 4300', J.B. Woolley, 87/012" (TAMU).

Etymology.—Name referring to carina along frontal edge of fore tibia.

Diagnosis.—Head and mesosoma dark and metallic; flagellum with 3-segmented clava (as in Figs 28, 29); flagellomeres 1 and 2 $1.4\times$ as long as wide; fore tibia with carina along frontal edge (as in Fig. 71); frons, including clypeus and mouth region, dark and metallic; thoracic dorsum with fine and weak reticulation; volsellar setae stout and sinuate, placed at apex of parameres (Fig. 99); digitus $3.7\times$ as long as wide.

Description.—Length of body female = 0.9–1.1 mm, male = 0.8 mm.

Colour: Antenna infusate, some specimens with antenna dark, except median part of scape, apical pedicel and flagellomeres 2 and 3 which are pale. Frons be-

low cross-groove metallic greenish-blue; above cross-groove golden-green. Vertex golden-red. Mesoscutum golden-green; scutellum golden-green to golden-red; dorsellum and propodeum golden-red. Coxae dark and metallic; femora dark; tibiae infusate with apex paler; tarsi infusate. Wings hyaline. Petiole dark. Gaster with weak golden-red tinge.

Head: Without frontal cross-ridge. Antennae as in *O. tria* (Figs 28, 29), i.e. with a distinct 3-segmented clava. Frons and vertex with weak smallmeshed reticulation. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with weak and fine smallmeshed reticulation. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster ovate. Male genitalia (Fig. 99): volsellar setae long and strong, placed at same level at apex of parameres; inner digital spine larger than outer; paramere with one seta close to apex of paramere.

14. *Omphale divina* (Girault)
(Figs 23, 97)

Achrysocharis divina Girault, 1917b:22.

Omphale divina (Girault), Yoshimoto 1980:1047.

Diagnosis.—Female. Head pale yellow nonmetallic, frons usually with brown cross-stripes, mesosoma metallic (bluish-purple or bluish-green)—scutellum predominantly yellow nonmetallic in a few specimens; scape expanded with a ventral edge; temples small; thoracic dorsum with raised and strong reticulation. Male. Phallobase with digitus very elongate, $7\times$ as long as wide and with volsellar setae curved.

Distribution.—Chiapas, Colima, Guajuato, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla, Tamaulipas, Veracruz, Zatecas. 252 females 80 males. New record for Mexico.

Remarks.—A few specimens have entire frons dark and metallic (majority with frons yellow nonmetallic and usually with fuscous cross-stripes (Hansson 1996)).

15. *Omphale obscura* n.sp.
(Figs 24, 25)

Type material.—Holotype female labelled "Chiapas, Parque Nacional Lagunas de Montebello, 11.viii.1990, 5000', J.B. Woolley, 90/061" (USNM). Paratypes: 1 male with same label data as holotype (TAMU).

Etymology.—"Obscura" meaning dark, referring dark colouration of species (as opposed to the similar species *vinacea*, which usually is pale).

Diagnosis.—Head and mesosoma dark and metallic; flagellomeres equal in length and narrow in both sexes (1st flagellomere is always distinctly wider than following segments in the similar *O. vinacea*); apical gastral tergite elongate in female, $2.4\times$ as long as wide at base; clypeus as wide as long; body dark and metallic (yellow nonmetallic or infuscate in most specimens of *O. vinacea*); male genitalia as in *O. petatlana* (Fig. 96).

Description.—Length of body female = 2.2 mm, male = 1.4 mm.

Colour: Scape infuscate, slightly darker in male than in female, pedicel and flagellum dark. Female frons golden-green, pale nonmetallic close to mouth opening and below toruli, vertex golden; male frons and vertex golden-purple with pale nonmetallic spots below toruli. Mesoscutum and propodeum golden-green; scutellum golden-purplish. Coxae dark and metallic; remaining parts of legs pale, hind femur infuscate. Wings hyaline. Petiole pale. Gaster with golden lines.

Head: Without frontal cross-ridge. Antennae as in Figs 24, 25. Frons and vertex with weak reticulation, smooth and shiny in some places. Clypeus quadratic, as wide as long. Frontal cross-groove straight. Occipital margin with sharp edge.

Mesosoma: Mesoscutum and scutellum with weak reticulation. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster elongate, final tergite elongate, $2.4\times$ as long as wide at base. Male genitalia with volsellar setae long and strong, placed at apex of parameres; inner digital spine larger than outer; paramere with one seta below apex of paramere.

16. *Omphale petatlana* n.sp.
(Figs 26, 27, 96, 115)

Type material.—Holotype female labelled "Guerrero, 32mi SE Petatlan, 10.vii.1985, J.B. Woolley, 85/047" (USNM). Paratypes: 4 females 16 males with same label data as holotype, 1 male gaster on slide (no. 254) (2 females 8 males LUZM, 2 females 8 males TAMU); 1 female "Chiapas, Ocozacoutla, 8.viii.1990, 1800–2200', J.B. Woolley, 90/055B" (TAMU); 4 females "Michoacan, 3mi N Nueva Italia, 8.vii.1985, J.B. Woolley and G. Zolnerowich, 85/042" (2 females LUZM, 2 females TAMU); 1 female "Oaxaca, 4.4mi NE San Pedro Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/065" (TAMU); 4 females "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (2 females LUZM, 2 females TAMU); 1 male "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (TAMU); 1 female "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (LUZM); 1 male "Michoacan, 28.5mi S Nueva Italia, 9.vii.1985, J.B. Woolley and G. Zolnerowich, 85/045", gaster on slide (no. 255) (TAMU).

Etymology.—"From Petatlan".

Diagnosis.—Head and mesosoma pale nonmetallic; mesoscutum and scutellum with strong reticulation, hence dull; clypeus as wide as long.

Description.—Length of body female= 1.1–1.3 mm, male= 0.8–0.9 mm.

Colour: Scape and pedicel pale yellow with scape fuscous along dorsal edge and pedicel fuscous at base, or completely pale yellow; flagellum yellowish-brown, in female frequently with flagellomeres 4 and 5 dark. Head pale yellow with infuscate spots close to eyes and with antennal scrobes infuscate. Vertex pale yellow, setae dark. Thorax pale yellow, setae dark. Legs pale yellow. Wings hyaline, or forewing with fuscous spot below stigmal vein. Petiole pale yellow. Female gaster pale yellow, hind edge of tergites 1–5 dark, apical part of ovipositor sheaths dark; male gaster with pale subbasal spot and with apical $\frac{1}{2}$ dark.

Head: Without frontal cross-ridge. Antennae as in Figs 26, 27. Frons and vertex with strong smallmeshed reticulation, hence dull. Clypeus quadratic, as wide as long. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum, scutellum, dorsellum and propodeum with strong smallmeshed reticulation; midlobe of mesoscutum with 2 pair of setae, occasionally with 5 setae (2 pair and an odd seta). Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster elongate. Male genitalia (Fig. 96) with volsellar setae long and strong, placed at apex of parameres; inner digital spine larger than outer; paramere with one seta below apex of paramere.

17. *Omphale poeta* (Girault)

Rhinopectomyia carlylei var. *poeta* Girault, 1920: 197.

Omphale poeta (Girault), Hansson (1996b:37).

Diagnosis.—Head and mesosoma dark and metallic; fore tibia with an edge along frontal margin; head dark and metallic with frons below antennal toruli pale, except partly to completely metallic clypeus; temples large; antennae with short setae;

mouth opening wide, 1.2–1.3× height of an eye in female, 1.2–1.5× in male; thoracic dorsum with raised rather strong reticulation; male genitalia with digitus 3× as long as wide, volsellar setae almost straight.

Distribution.—Guerrero, Jalisco. 28 females. New record for Mexico.

18. *Omphale tria* n.sp.

(Figs 28, 29, 37, 95, 114)

Type material.—Holotype female labelled "Guerrero, 6.2mi SW Xochipala, 13.vii.1985, J.B. Woolley, 85/056" (USNM). Paratypes: 24 females 6 males with same label data as holotype, 1 male gaster on slide (no. 248) (12 females 3 males LUZM, 12 females 3 males TAMU); 2 females "Guerrero, 2mi N Cacahuamilpa, 19.vii.1984, 5000', J.B. Woolley, 84/043" (LUZM, TAMU); 3 females "Oaxaca, 29.1mi E Po-chutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (1 female LUZM, 2 females TAMU); 5 females "Michoacan, 3mi N Nueva Italia, 8.vii.1985, J.B. Woolley and G. Zolnerowich, 85/042" (2 females LUZM, 3 females TAMU); 1 female "Zacatecas, Tropic of Cancer marker on highway 54, 1958m, 4.vii.1984, J.B. Woolley, 84/016" (TAMU).

Etymology.—No specific derivation.

Diagnosis.—Head entirely pale nonmetallic (female) or with vertex metallic (male), mesosoma dark and metallic; flagellum pale with 3-segmented clava, flagellomeres 1 and 2 about as long as wide (Figs 28, 29); fore tibia with carina along frontal edge (Fig. 37); frons predominantly pale nonmetallic in female; digitus elongate, 9× as long as wide (Fig. 95); volsellar setae placed just below apex of parameres.

Description.—Length of body female= 0.9–1.3 mm, male= 0.9 mm.

Colour: Female antenna pale with base of pedicel and flagellomeres 4 and 5 infuscate, male antenna completely pale. Female frons pale nonmetallic with 3 transverse stripes (as in Fig. 123), stripes sometimes present only close to eyes, or absent;

male frons predominantly metallic greenish-blue except pale area around mouth opening. Female vertex pale non-metallic; male vertex metallic greenish-blue. Occiput golden-green in both sexes. Female thoracic dorsum golden-red or golden-green; male mesoscutum golden-green, scutellum, dorsellum and propodeum golden-red to golden-purple. Coxae dark and metallic; fore femur weakly infusate, mid femur pale, hind femur infusate; fore and mid tibiae pale, hind tibia infusate; tarsi pale to weakly infusate. Female forewing with small infusate spot below stigmal vein, sometimes also with weak spot below median marginal vein; male forewing completely hyaline. Petiole dark. Gaster golden-purple.

Head: Without frontal cross-ridge. Antennae as in Figs 28, 29, i.e. with a distinct 3-segmented clava. Frons and vertex with strong smallmeshed reticulation. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum in female with strong, in male with weak, and smallmeshed reticulation. Dorsellum small, convex with weak reticulation. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster ovate. Male genitalia (Fig. 95) with volsellar setae long and strong, placed at same level, just below apex of parameres; inner digital spine larger than outer; paramere with one seta close to apex of paramere.

19. *Omphale triangulata* n.sp.

(Figs 21, 22, 30, 40)

Type material.—Holotype female labelled "Guerrero, 32mi SE Petatlan, 14.vii.1984, J.B. Woolley, 84/032" (USNM).

Etymology.—Name referring to shape of scape.

Diagnosis.—Head pale nonmetallic, mesosoma dark and metallic; scape triangular (Fig. 30), strongly flattened with a sharp ventral edge; 1st flagellomere flattened and distinctly wider than remaining

flagellomeres (Fig. 30); antenna dark with 3rd flagellomere pale; head pale nonmetallic with 3 dark cross-stripes (Figs 21, 22); forewing with characteristic pattern (Fig. 40).

Description (female).—Length of body = 1.6 mm.

Colour: Entire antenna dark, except pale stripe on scape and pale 3rd flagellomere. Frons pale nonmetallic with 3 dark cross-stripes. Vertex pale nonmetallic. Midlobe of mesoscutum and median scutellum metallic bluish-green, sidelobes of mesoscutum and sides of scutellum metallic purple. Dorsellum and propodeum metallic bluish-purple. Coxae, femora and tibiae dark and metallic; tarsi pale. Forewing with infusate pattern as in Fig. 40. Petiole dark. Gaster with 1st tergite metallic bluish-purple, remaining tergites golden-purple.

Head: Without frontal cross-ridge. Antenna as in Fig. 30, i.e. with a triangular and strongly flattened scape and with 1st flagellomere distinctly wider than remaining flagellomeres. Frons and vertex with strong smallmeshed reticulation. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with strong and smallmeshed reticulation, scutellum smooth and shiny laterally and along posterior margin. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster elongate, acuminate at apex.

20. *Omphale vinacea* Hansson

(Figs 31, 32)

Omphale vinacea Hansson, 1996b:37.

Diagnosis.—Yellow to pale brown, non-metallic species—occasionally with head and mesosoma dark and weakly metallic; clypeus as high as wide; forewing usually with an infusate spot below marginal vein; frontal cross-groove high up on frons.

Distribution.—Chiapas, Colima, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla, Tamaulipas, Veracruz. 17 females 24 males. New record for Mexico.

Species group *notaula*

Diagnosis.—Clypeus semicircular and semicircularly protruding (Figs 38, 39). Head without frontal cross-ridge in *foveata* (Fig. 38), with weak frontal cross-ridge in *notaula* (Fig. 39). Male flagellomeres with verticillate setae, i.e. with a single basal whorl of setae on each flagellomere (Figs 34, 36). Male genitalia (Fig. 103): volsellar setae long and strong and placed at different levels below base of volsellar ridges; digitus 2–3× as long as wide and with concavity in basal outer half, inner digital spine larger than outer; paramere with 1–2 setae at apex; aedeagus (Fig. 117) long and slender, aedeagal apodemes 0.8–0.9× as long as penis valves. Flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b). Notauli complete and deep throughout. Radial cell hairy.

Apomorphies.—Flagellomeres with elongate and asymmetric sensilla ampullacea; male flagellomeres with verticillate setae. Notauli complete and deep throughout. Male genitalia: volsellar setae placed at different levels; digitus elongate and with concavity in basal outer half.

21. *Omphale foveata* n.sp. (Figs 35, 36, 38, 41, 103, 117)

Type material.—Holotype female labelled "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068", in USNM. Paratypes: 2 females 2 males with same label data as holotype, 1 male gaster on slide (no. 237) (1 female 1 male LUZM, 1 female 1 male TAMU); 1 female 1 male "Oaxaca, 15.1mi N San Gabriel Mixtepec, 3850', 11.vii.1987, J.B. Woolley and G. Zolnerowich, 87/031" (TAMU); 2 females 2 males "COSTA RICA: Alajuela, N slope Volcan Cacao, 650 m, 17.iii.1986, C. Hansson" (LUZM); 1 fe-

male "COSTA RICA: Turrialba, CATIE, Reventazon, 4.ix.1986, L. Masner" (CNC); 1 female "COSTA RICA: Puntarenas, Monteverde, St Luis Valley, 17.viii.1986, L. Masner" (CNC); 4 females 1 male "COSTA RICA: Limon, Hitoy-Cerere BR HQ, 14–18.i.1991, 100m, J.S. Noyes" (BMNH, LUZM); 1 female "ECUADOR: Pichin, Tinalandia, 2.xi.1983, 850 m, Masner and Sharkey" (CNC).

Etymology.—"Foveata" meaning "with pits", referring to pits on scutellum.

Diagnosis. Scutellum with two deep pits (Fig. 41); paramere with one seta at apex (Fig. 103).

Description.—Length of body female = 1.0–1.3 mm, male = 0.9–1.2 mm.

Colour: Scape pale yellow, pedicel and flagellum dark. Clypeus dark and metallic. Frons golden-purple to golden-green in female, metallic bluish-green in male. Vertex golden-purple. Mesoscutum and scutellum golden-purple. Dorsellum and propodeum golden-green. Female with fore coxa infusate, remaining parts of fore leg, mid and hind legs pale; male with coxae dark and metallic, hind femur infusate and remaining parts of legs pale. Wings hyaline. Petiole pale. Gaster with 1st tergite golden-green, remaining tergites golden-purple.

Head: Antennae as in Figs 35, 36. Frons and vertex with very weak reticulation. Antennal scrobes reach frontal cross-groove separately. Occipital margin with a sharp edge.

Mesosoma: Mesoscutum and scutellum with fine and engraved reticulation; setae on dorsum long and strong; scutellum with two deep pits. Dorsellum small, convex and smooth. Forewing speculum closed below.

Metasoma: Gaster elongate in female. Male genitalia (Fig. 103): paramere with one seta at apex of paramere.

Remarks. *Omphale foveata* resembles *O. erginnus* (lacking frontal cross-ridge and having elongate and asymmetric sensilla ampullacea on flagellomeres) but differs

as follows. Male flagellomeres with verticillate setae (i.e. with a single whorl of setae at base of each flagellomere) (scattered in *erginnus*), clypeus completely delimited (lacking upper border in *erginnus*), vertex with short setae (long setae in *erginnus*). The deep and complete notauli is very unusual, and the scutellar pits present in *O. foveata* is unique within genus *Omphale*.

22. *Omphale notaula* n.sp.
(Figs 33, 34, 39)

Type material.—Holotype female labelled "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (USNM). Paratypes: 8 females 12 males with same label data as holotype (4 females 6 males LUZM, 4 females 6 males TAMU); 6 females 11 males "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (3 females 5 males LUZM, 3 females 6 males TAMU); 8 females 3 males "Oaxaca, 29.1mi E Po-chutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (4 females 1 male LUZM, 4 females 2 males TAMU); 1 male "Oaxaca, 3.9mi NE San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley, 85/067" (TAMU); 2 males "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068" (LUZM, TAMU); 1 male "Oaxaca, 3mi SE Matatlan, Microondas Road, 17.vii.1987, 6650', J.B. Woolley and G. Zolnerowich, 87/049" (TAMU); 1 female "Chiapas, 12.1km S Palenque, 13.viii.1990, 1200', J.B. Woolley, 90/063" (TAMU); 1 male "Chiapas, Parque Nacional Lagunas de Montebello, 11.viii.1990, 5000', J.B. Woolley, 90/061" (TAMU); 1 female 1 male "Chiapas, 6mi N Berriozabal, 8–9.viii.1990, 4000', J.B. Woolley, 90/056" (LUZM); 1 female 3 males "Chiapas, Municipal Tenejapa, Paraje Yashanal, 5200–5800', 4.viii.1990, J.B. Woolley, 90/052"; 1 female "Guerrero, 2mi N Cacahuamilpa, 19.vii.1984, 5000', J.B. Woolley, 84/043" (TAMU); 2 females 7 males "Guerrero, 2mi NE Cacahuamil-

pa, 4.vii.1987, 5300', R. Wharton" (1 female 3 males LUZM, 1 female 4 males TAMU); 1 male "Guerrero, 2.1mi NE Cacahuamilpa, 4.vii.1987, 5250', J.B. Woolley, 87/011" (TAMU); 1 male 1 female "Guerrero, 32mi SE Petatlan, 10.vii.1985, J.B. Woolley, 85/047" (LUZM); 1 female "Guerrero, 7mi W Chilapa, 16.vii.1984, J.B. Woolley, 84/036" (TAMU); 3 females 4 males "Jalisco, 16mi S Autlan, 8.vii.1984, J.B. Woolley, 84/025" (1 female 2 males LUZM, 2 females, 2 males TAMU); 2 females 1 male "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (TAMU); 1 female 1 male "Jalisco, 8.3mi S Autlan on highway 80, 8.vii.1984, J.B. Woolley, 84/024" (LUZM); 2 females 1 male "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (TAMU); 1 female "Puebla, 4.7mi SW La Cumbre, 23.vii.1987, 5100', R. Wharton" (TAMU); 1 female 4 males "Puebla, 4.7mi SW La Cumbre, 23.vii.1987, 5100', J.B. Woolley, 87/055", 1 male gaster on slide (no. 264) (1 female 2 males LUZM, 2 males TAMU); 1 female "Tamaulipas, road from Alta Cimas to Rancho de Cielo, 6.vii.1986, R. Jones and P. Kovarik" (TAMU); 1 male "Tamaulipas, 2mi W Gomez Farias, 5.vii.1986, G. Zolnerowich" (LUZM); 1 female 4 males "Veracruz, 3mi NE Huatusco, 22.vii.1985, J.B. Woolley, 85/084" (1 female 2 males LUZM, 2 males TAMU); 1 male "Veracruz, 11mi S Misantla, 24.vii.1984, J.B. Woolley, 84/051" (TAMU).

Etymology.—Name referring to complete notauli in this species.

Diagnosis.—Scutellum without pits; parame-re with two setae at apex.

Description.—Length of body female = 0.9–1.5 mm, male = 0.8–1.3 mm.

Colour: Scape pale to infusate in female, male scape infusate to dark with base pale; pedicel and flagellum dark. Female with frons below cross-groove golden-red, golden-green or golden; above cross-groove metallic bluish-purple, golden-purple or golden-green; vertex metallic bluish-purple, bluish-green or golden-

green. Male with frons and vertex metallic greenish-blue, vertex sometimes golden-purple. Midlobe of mesoscutum golden-purple or golden; sidelobes metallic bluish-green or golden-purple. Scutellum metallic bluish-green, bluish-purple or golden-green. Propodeum golden-green. Fore coxa dark and metallic, mid and hind coxae pale, to all coxae dark and metallic; remaining parts of legs pale yellow, femora sometimes dark. Wings hyaline to infusate. Petiole pale to dark. Gaster with 1st tergite metallic bluish-green, remaining tergites golden-purple.

Head: Antennae as in Figs 33, 34. Frons and vertex with weak superficial reticulation, shiny, to smooth and shiny without reticulation. Antennal scrobes reach frontal cross-groove separately. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Midlobe of mesoscutum with weak reticulation, sidelobes and scutellum with weak superficial reticulation, shiny. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster ovate. Male genitalia: paramere with two setae at apex of paramere.

Species group *obscurinotata*

Diagnosis.—Clypeus (Figs 51–53) poorly delimited, more or less semicircular and semicircularly protruding below lower edge of frons. Head without frontal cross-ridge. Male flagellomeres with verticillate, i.e. with a single basal whorl of setae on each flagellomere (Figs 45, 47, 48), or scattered (Fig. 42) arrangement of setae. Male genitalia (Fig. 104): volsellar setae laterally flattened and placed at different levels far below apex of parameres and below base of volsellar ridges; digitus as long as wide to transverse; paramere with one seta close to apex; aedeagus (Fig. 124) slender, sometimes expanded apically. Flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson

1996b). Forewing with radial cell bare but without hairline from stigmal vein; speculum closed below.

Apomorphies.—Clypeus poorly delimited. Male flagellomeres with verticillate setae (reversed in some species).

23. *Omphale acuminativentris* (Girault) (Figs 48, 49)

Achrysocharella acuminativentris Girault, 1917c:6.
Omphale acuminativentris (Girault), Yoshimoto 1978:716.

Diagnosis.—Entire frons pale nonmetallic in female, in male pale nonmetallic below frontal cross-groove, dark and metallic above cross-groove; flagellum with slender segments and with long setae in female, ventral setae especially long from 2nd segment and onwards; male scape widest in middle, flagellomeres long and slender with only a proximal whorl of thin setae; 7th tergite of female gaster long, 3× as long as width of base.

Distribution.—Chiapas, Colima, Guerrero, Jalisco, Michoacan, Oaxaca, Tamaulipas, Veracruz. 104 females 5 males. New record for Mexico.

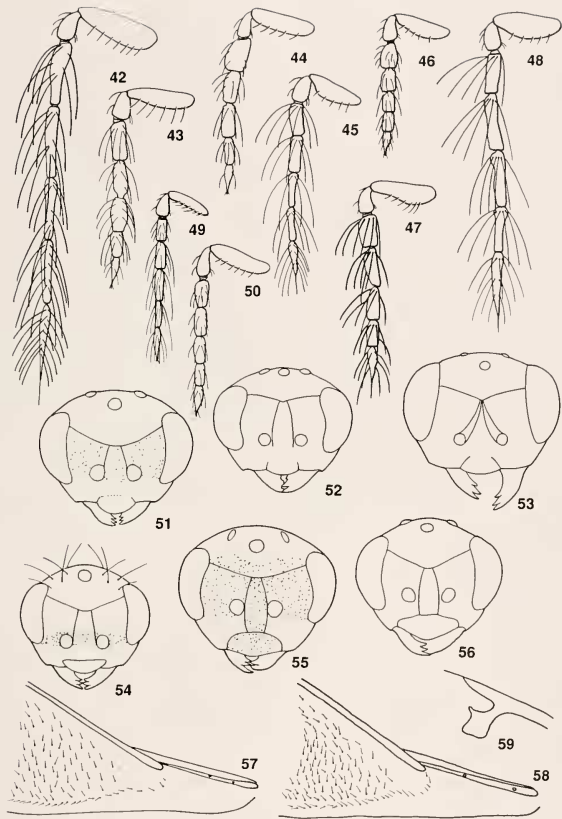
Remarks.—Some specimens from Mexico have head and mesosoma dark and metallic.

24. *Omphale fulgida* n.sp. (Figs 44, 45, 52, 119)

Type material.—Holotype male labelled "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (USNM). Paratypes: 1 male 3 females with same label data as holotype, male gaster on slide (no. 291) (1 female 1 male LUZM, 2 females TAMU); 1 female "Chiapas, Ocozacoautla, 8.viii.1990, 1800–2200', J.B. Woolley, 90/055B" (TAMU).

Etymology.—"Fulgida" latin for shiny, referring to shiny clypeus.

Diagnosis.—Frons, including clypeus, metallic and shiny in both sexes; male flagellomeres with fine and verticillate setae (Fig. 45).



Figs. 42-59. 42-50. Antennae. 42, *pallida*, male. 43, Ditto, female. 44, *fulgida*, female. 45, Ditto, male. 46, *obscurinotata*, female. 47, Ditto, male. 48, *acuminativentris*, male. 49, Ditto, female. 50, *gracilis*, female. 51-56. Head, frontal. 51, *pallida*, male. 52, *fulgida*, male. 53, *gracilis*, female. 54, *angusticornis*, female. 55, *cumbrensis*, male. 56, *zolnerowichi*, male. 57-58. Base of forewing. 57, *pallida*. 58, *masneri*. 59, Stigmal vein, *pallida*.

Description.—Length of body male= 1.0–1.1 mm, female= 1.1–1.2 mm.

Colour: Entire antenna dark in male, scape in female pale with apical tip dark. Frons golden-green with pale spots below toruli, in one female entire frons below toruli (except metallic clypeus) pale. Vertex golden-purple in male, golden-green in female. Mesoscutum and scutellum with golden-green tinges. Fore and mid coxae infusate, hind coxa dark and metallic; femora and tarsi infusate; tibiae pale. Wings hyaline. Petiole dark. Gaster golden-purple, with pale subbasal spot in male.

Head: Antennae as in Figs 44, 45. Frons and vertex smooth and shiny. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine and weak reticulation, smooth in some places. Dorsellum small, flat and smooth. Forewing without stigmal hairline but with radial cell bare.

Metasoma: Female gaster ovate. Male genitalia (as in Fig. 104) with inner digital spine about twice as large as outer spine, spines placed wide apart.

25. *Omphale gracilis* n.sp.
(Figs 50, 53)

Type material.—Holotype female labelled "Jalisco, 8.3mi S Autlan on highway 80, 5000', 8.vii.1984, J.B. Woolley" (USNM).

Etymology.—"Gracilis" latin for slender, referring to slender mesosoma.

Diagnosis.—Frons golden-green and clypeus pale in female (male unknown); antennae, legs and gaster pale; mesosoma elongate, 1.8× as long as wide.

Description (female).—Length of body= 1.2 mm.

Colour: Antenna pale. Clypeus pale. Frons and vertex golden-green. Thorax golden-green with reddish tinge. Legs pale. Wings hyaline. Petiole pale. Gaster pale, apical part of ovipositor sheaths dark.

Head: Without frontal cross-ridge. Antenna as in Fig. 50. Frons with very weak reticulation, almost smooth. Vertex with weak reticulation. Clypeus poorly delimited dorsally. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation. Dorsellum small, convex and smooth. Forewing without stigmal hairline but with radial cell bare.

Metasoma: Female gaster elongate.

26. *Omphale masneri* Hansson
(Fig. 58)

Omphale masneri Hansson, 1996b:32.

Diagnosis.—Predominantly dark with weak metallic tinges; clypeus and frons below toruli pale brown in female, white in male; male flagellomeres with scattered setae; forewing densely pubescent; setae on thoracic dorsum long.

Distribution.—Oaxaca. 1 female. New record for Mexico.

27. *Omphale obscurinotata* (Girault)
(Figs 46, 47)

Achrysocharella obscurinotata Girault, 1916a:306.

Omphale obscurinotata (Girault), Yoshimoto 1978:717.

Diagnosis.—Entire frons pale nonmetallic in female, in male pale nonmetallic below frontal cross-groove, dark and metallic above cross-groove; flagellum with short and stout segments and with comparatively short setae in female; male scape widest at base, flagellomeres short and stout with thick and bent setae—apart from a proximal whorl also with some setae apical to whorl.

Distribution.—Guanajuato, Guerrero, Jalisco, Michoacan, Oaxaca. 63 females 52 males. New record for Mexico.

28. *Omphale pallida* n.sp.
(Figs 42, 43, 51, 57, 59, 104, 124)

Type material.—Holotype male labelled "Michoacan, 6mi N Cheran, 8.vii.1985, J.B.

Woolley, 85/034" (USNM). Paratypes: 5 males 4 females with same label data as holotype, one male gaster on slide (no. 258) (2 males 2 females LUZM, 3 males 2 females TAMU); 1 female "Michoacan, 2mi S Carapan, 6.vii.1985, J.B. Woolley, 85/031" (TAMU); 1 female "Chiapas, 4km W San Cristobal, San Felipe, 7200', 10-13.viii.1990, J.B. Woolley, 90/058" (LUZM); 1 female "Chiapas, San Cristobal Reserva Huitepec, 7300-7500', 3.viii.1990, J.B. Woolley, 90/051A" (LUZM); 1 male "Chiapas, San Cristobal Reserva Huitepec, 7700-7850', 3.viii.1990, J.B. Woolley, 90/051B" (TAMU); 1 female "Guerrero, 2mi E Ocotito, 11.vii.1985, J.B. Woolley, 85/048" (LUZM); 4 males 2 females "Guerrero, 17mi E Tixtla, 11.vii.1985, J.B. Woolley and G. Zolnerowich, 85/050" (2 males 1 female LUZM, 2 males 1 female TAMU); 2 females "Guerrero, 6.2mi SW Xochipala, 13.vii.1985, J.B. Woolley, 85/056" (LUZM, TAMU); 1 female "Guerrero, 6mi NE Tixtla de Guerrero, 16.vii.1984, J.B. Woolley, 84/035" (TAMU); 1 male "Jalisco, 8.3mi S Autlan on highway 80, 8.vii.1984, J.B. Woolley, 84/024" (TAMU); 1 male "Oaxaca, Llano de las Flores, 17.vii.1987, 8900', R. Wharton" (LUZM); 1 male 2 females "Oaxaca, 3.2mi SW La Cumbre, 8.vii.1985, J.B. Woolley, 85/071" (TAMU); 1 male 9 females "Oaxaca, 8mi NE El Punto, 18.vii.1985, J.B. Woolley and G. Zolnerowich, 85/074" (1 male 5 females LUZM, 4 females TAMU); 1 female "Oaxaca, 6mi NE Mitla, 20.vii.1985, J.B. Woolley, 85/077" (TAMU); 2 females "Oaxaca, 19mi S San Miguel Suchixtepec, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/069" (LUZM); 1 female "Puebla, 4mi E Azumbilla, 22.vii.1984, J.B. Woolley, 84/047" (TAMU); 2 females "Puebla, 3.7mi S Zacapoaxtla, 23.vii.1985, J.B. Woolley, 85/085" (LUZM, TAMU); 1 male 3 females "Veracruz, 3mi NE Huatusco, 22.vii.1985, J.B. Woolley, 85/084" (1 male 1 female LUZM, 2 females TAMU).

Etymology.—"Pallida" is latin for pale,

referring to pale frons below level of antennal toruli in male.

Diagnosis.—Male: frons below level of toruli pale (including clypeus) (Fig. 51), above this level dark and metallic; flagellomeres long and narrow, with strong and scattered setae (Fig. 42). Female: frons pale nonmetallic or pale below toruli and dark and metallic above. Both sexes: stigmal vein enlarged (Fig. 59).

Description.—Length of body male = 0.9-1.5 mm, female = 1.3-2.0 mm.

Colour: Male: Antenna dark, a few specimens with scape pale and apical tip dark. Frons below toruli and eyes pale, above golden-green (a few specimens pale up to frontal cross-groove). Vertex golden-green. Mesoscutum and scutellum golden-green or golden-purple, one male with sides of scutellum pale nonmetallic. Coxae and femora pale to dark; tibiae and tarsi pale to infusate. Wings hyaline, forewing occasionally infusate round stigmal vein. Petiole dark. Gaster golden-purple with pale subbasal spot, to completely dark and metallic. Female: Scape pale with apex and base dark to completely dark; pedicel pale brown to dark brown; flagellum dark. Head pale nonmetallic to pale with frons above toruli and vertex golden-green. Mesoscutum and scutellum yellowish-brown with weak metallic tinge to golden-green. Coxae yellowish-brown to dark and metallic; femora, tibiae and tarsi yellowish-brown to infusate. Wings hyaline. Petiole dark. Gaster pale with posterior $\frac{1}{2}$ of tergites dark, to completely dark with weak metallic tinges.

Head: Antennae as in Figs 42, 43. Frons and vertex smooth and shiny. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine and weak reticulation. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster elongate. Male genitalia (Fig. 104) with inner digital

spine about twice as large as outer spine, spines placed wide apart.

Remarks. The female of *pallida* is very similar to the female of *acuminativentris*, the only difference being the enlarged stigmal vein and the metallic thoracic dorsum in *pallida* (thoracic dorsum nonmetallic in *acuminativentris*).

Species group *scutellata*

Diagnosis.—Clypeus with rounded sides (Figs 54–56, 63), sides never straight and clypeus hence never quadrangular, metallic or partly metallic, never completely pale. Head with frontal cross-ridge (see Fig. 1) (weak or missing in newly described species below). Male flagellomeres with verticillate setae, i.e. with a single basal whorl of setae on each flagellomere (Fig. 61). Male genitalia (Fig. 105): volsellar setae long and strong and placed far below apex of parameres and base of volsellar ridges, and at different levels; digitus as long as wide to transverse, digital spines of same size or inner spine larger than outer; paramere with one slender seta on outer apical corner, inner apical corner of paramere drawn out to a long and narrow structure that looks just like a seta (Hansson (1996b) regarded this structure as a seta but there is no joint between structure and paramere, therefore it is no seta); aedeagus (Fig.) with penis valves narrow at base and wide at apex. Flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson 1996b). Females with surface between antennal toruli and frontal cross-ridge pale, males also with frons below cross-ridge completely or predominantly pale.

Apomorphies.—Head with frontal cross-ridge; clypeus with rounded sides; male flagellomeres with verticillate setae. Male genitalia: inner apical corner of paramere drawn out; volsellar setae placed at different levels.

29. *Omphale angusticornis* n.sp.

(Figs 54, 60, 65)

Type material.—Holotype female labelled "Chiapas, 12.1km S Palenque,

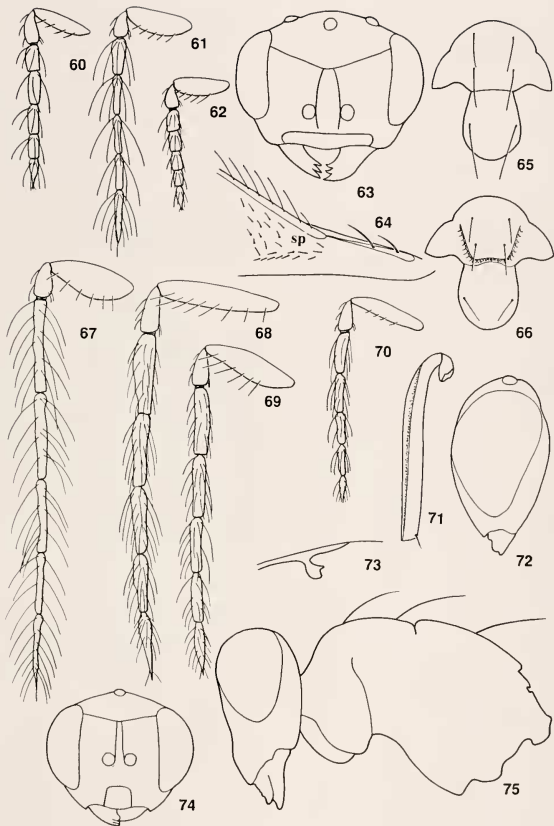
13.viii.1990, 1200', J.B. Woolley, 90/063" (USNM). Paratypes: 5 females with same label data as holotype (2 females LUZM, 3 females TAMU); 1 female "Chiapas, 8mi N Berriozabal, 9.viii.1990, 3600', J.B. Woolley, 90/057B" (TAMU); 4 females "Jalisco, 16mi S Autlan, 8.vii.1984, J.B. Woolley, 84/025" (2 females LUZM, 2 females TAMU); 9 females "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (5 females LUZM, 4 females TAMU); 1 female "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (TAMU); 12 females "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (6 females LUZM, 6 females TAMU); 2 females "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068" (LUZM, TAMU); 5 females "Oaxaca, 3.9mi NE San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley, 85/067" (2 females LUZM, 3 females TAMU); 1 female "Quintana Roo, 68km SW Chetumal, Kohunlich, 14–17.1983, 160m, M. Kaulbars" (CNC); 1 female "Tamaulipas, Reserva El Cielo Alta Cimas, 30.vii.1993, 3100', J.B. Woolley and K. Wikse, 93/035" (TAMU).

Etymology.—"Angusticornis" latin for "narrow antenna".

Diagnosis.—Body predominantly pale yellow to predominantly dark with weak metallic tinge; clypeus yellow to pale brown with weak metallic tinge, never dark and metallic; flagellum long and slender (Fig. 60); setae on vertex and thoracic dorsum black and long (Fig. 65).

Description (female).—Length of body = 1.0–1.4 mm.

Colour: Scape and pedicel pale yellow to infusate; flagellum pale brown to dark. Frons pale yellow with golden-green stripe from eye to eye in level with antennal toruli, to golden-green with pale spots below toruli; clypeus pale brown with weak metallic tinge. Vertex pale yellow to dark with golden tinge, setae black. Thorax pale yellow, or mesoscutum dark with



Figs. 60-75. 60-62. Antennae. 60, *angusticornis*, female. 61, *zolnerowichii*, male. 62, *orianpla*, female. 63, Head, frontal, *orianpla*, female. 64, Base of forewing, *zolnerowichii* (sp= speculum). 65-66. Mesoscutum+scutellum, dorsal. 65, *angusticornis*. 66, *fossata*. 67-70. Antennae. 67, *uruapana*, male. 68, *valida*, female. 69, *uruapana*, female. 70, *fossata*, female. 71, Foretibia, lateral, *valida*. 72, Head, lateral, *uruapana*, female. 73, Stigmatal vein, *tempora*. 74, Head, frontal, *fossata*, female. 75, Head+mesosoma, lateral, *erginnus*.

golden tinge and scutellum yellowish-brown with median metallic stripe. Legs pale yellow, femora infuscate in dark specimens. Wings hyaline. Petiole pale. Gaster pale yellow with sides dark brown to entire gaster dark brown, apical part of ovipositor sheaths dark.

Head: Antenna as in Fig. 60. Frons with weak smallmeshed reticulation. Vertex with strong smallmeshed reticulation, hence dull. Clypeus $3.3\times$ as wide as long. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine and weak reticulation; setae long, distance between a pair shorter than length of one seta. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline and with radial cell hairy.

Metasoma: Female gaster elongate.

30. *Omphale cumbrensis* n.sp.
(Fig. 55)

Type material.—Holotype male labelled "Oaxaca, 3.2mi SW La Cumbre, 8.vii.1985, J.B. Woolley, 85/071", gaster on slide (no. 283) (USNM). Paratype: 1 male with same label data as holotype (TAMU).

Etymology.—"From La Cumbre".

Diagnosis.—Frons close to mouth opening pale nonmetallic, but with clypeus dark and metallic; forewing speculum large (compared to *zolnerowichi*), open or closed below; male scape as in *zolnerowichi*, i.e. widest in median part (as opposed to *scutellata* and *vulgaris* in which scape is widest below middle).

Description (male).—Length of body = 1.0–1.2 mm.

Colour: Scape pale with apical $\frac{1}{4}$ dark; pedicel and flagellum dark. Frons, including clypeus, metallic bluish-green, below level of antennal toruli pale nonmetallic. Vertex golden. Mesoscutum golden-green to golden-purple. Scutellum golden-purple. Dorsellum golden-purple. Propodeum metallic bluish-green. Coxae dark and metallic, hind femur dark, remaining

parts of legs pale to infuscate. Wings hyaline. Petiole dark. Gaster golden-purple with anteromedian pale spot.

Head: Antenna as in *zolnerowichi* (Fig. 61). Frons and vertex smooth and shiny. Clypeus $2.3\times$ as wide as long. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation. Dorsellum small, convex and smooth. Forewing speculum open or closed below; without stigmal hairline but with radial cell more or less bare.

31. *Omphale oriampla* n.sp.
(Figs 62, 63)

Type material.—Holotype female labelled "Guerrero, 32mi SE Petatlan, 10.vii.1985, J.B. Woolley, 85/047" (USNM). Paratypes: 1 female with same label data as holotype (TAMU); 1 female "Colima, 7mi SSW Colima, 9.vii.1984, J.B. Woolley, 84/026a" (LUZM); 1 female "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (LUZM); 1 female "Michoacan, 49mi SE Aquila, 13.vii.1984, J.B. Woolley, 84/031" (TAMU).

Etymology.—"Oriampla" latin for "large mouth".

Diagnosis.—Mouth opening and clypeus very wide (Fig. 63), mouth opening $1.3\times$ as wide as height of eye and clypeus $8.5\times$ as wide as long; mesoscutum and scutellum yellow nonmetallic with very weak superficial reticulation.

Description (female).—Length of body = 0.9–1.0 mm.

Colour: Scape pale with apex infuscate; pedicel and flagellum dark. Frons and vertex with golden-green tinges, frons below level of toruli pale nonmetallic. Mesoscutum, scutellum and dorsellum yellow nonmetallic, one specimen with anterior $\frac{1}{2}$ of mesoscutum and a median stripe on scutellum golden-green; propodeum with golden-green tinges. Legs pale. Wings hyaline. Petiole pale. Gaster with golden-purple tinges.

Head: Antenna as in Fig. 62. Frons and vertex smooth and shiny. Clypeus $8.5\times$ as wide as long. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with very weak superficial reticulation, almost smooth. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline and with radial cell hairy.

Metasoma: Gaster ovate.

32. *Omphale scutellata* (Girault)

Rhynopeltomyia scutellata Girault, 1916b:40.

Rhynopeltomyia belisarii Girault, 1917a:4, syn.

Hansson (1996b:23).

Omphale scutellata (Girault), Schauff 1991:75.

Diagnosis.—Female mouth opening wide, $1.2\text{--}1.4\times$ the height of an eye.

Distribution.—Colima, Guanajuato, Guerrero, Jalisco, Michoacan, Morelos, Oaxaca, Puebla. 118 females. New record for Mexico.

33. *Omphale vulgaris* Hansson

Omphale vulgaris Hansson, 1996b:24.

Diagnosis.—Female mouth opening narrow, $1.0\times$ the height of an eye.

Distribution.—Chiapas, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla. 74 females. New record for Mexico.

Omphale scutellata/vulgaris

Distribution.—Colima, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla. 55 males.

34. *Omphale zolnerowichi* n.sp.

(Figs 56, 61, 64, 105, 122)

Type material.—Holotype male labelled "Chiapas, 12.1km S Palenque, 13.viii.1990, 1200', J.B. Woolley, 90/063" (USNM). Paratypes: 1 male with same label data as holotype (TAMU); 2 males "Chiapas, 8mi N Berriozabal, 9.viii.1990, 3600', J.B. Woolley, 90/057B" (LUZM, TAMU); 2 males "Chiapas, Ocozacoatlán, 8.viii.1990, 1800–2200', J.B. Woolley, 90/055B", 1 gaster on slide (no. 292) (LUZM, TAMU); 4 males

"Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (2 males LUZM, 2 males TAMU); 1 male "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (LUZM); 3 males "COSTA RICA: Heredia, La Selva, 50m, 22.i-2.ii.1991, J.S. Noyes" (BMNH).

Etymology.—Name referring to collector of some of the type material of this species.

Diagnosis.—Clypeus large (Fig. 56), about $2\times$ as wide as long; frons close to mouth opening dark and metallic; forewing speculum small and closed below (Fig. 64).

Description (male).—Length of body = 0.9–1.3 mm.

Colour: Scape pale with dorsal edge dark, to completely infuscate; pedicel and flagellum dark dorsally and pale ventrally, to completely dark. Frons, including clypeus, metallic bluish-green, bluish-purple or golden-green, with pale spots below toruli. Vertex golden-purple to golden-green. Mesoscutum with anterior $\frac{1}{2}$ golden-green and posterior $\frac{1}{2}$ yellow nonmetallic, to predominantly golden-green with only posterior border pale nonmetallic. Scutellum yellow nonmetallic, median $\frac{1}{3}$ with longitudinal golden-green stripe, to predominantly golden-green with only sides pale nonmetallic. Dorsellum yellow nonmetallic. Propodeum metallic purple. Hind coxa dark and metallic, remaining parts of legs pale, tarsi infuscate. Forewing with infuscate spot below stigmal vein. Petiole dark. Gaster golden-purple with anteromedian pale spot.

Head: Antenna as in Fig. 61. Frons and vertex smooth and shiny. Clypeus large, $2\times$ as wide as long. Frontal cross-groove V-shaped. Occipital margin rounded.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation. Dorsellum small, convex and smooth. Forewing speculum small and closed below; without stigmal hairline and with radial cell hairy.

Species group *semiglobosa*

Diagnosis.—Clypeus semicircular to quadrangular with rounded corners (Fig. 74), dark and metallic. Head without frontal cross-ridge. Male flagellomeres with scattered setae (Fig. 67). Male genitalia (Fig. 106): volsellar setae long and strong and placed distinctly below parameres and volsellar ridges, and at same level; digitus elongate with inner digital spine enlarged and placed above outer spine; paramere with one long and slender seta at apex of paramere; aedeagus (Fig. 118) wide medially. Flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b). Forewing long and narrow, $HW < LM$.

Apomorphies.—Flagellomeres with elongate and asymmetric sensilla ampullacea. Forewing long and narrow. Male genitalia: digital spines placed at different levels; digitus elongate.

35. *Omphale fossata* n.sp. (Figs 66, 70, 74)

Type material.—Holotype female labelled "Oaxaca, 15.1mi N San Gabriel Mixtepec, 3850', 11.vii.1987, J.B. Woolley and G. Zolnerowich, 87/031" (USNM). Paratypes: 1 female with same label data as holotype (TAMU); 3 females "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (2 females LUZM, 1 female TAMU); 1 female "Michoacan, 10mi S Uruapan, 7.vii.1985, J.B. Woolley and G. Zolnerowich, 85/037" (TAMU).

Etymology.—"Fossata" meaning "with trench", referring to groove between mesoscutum and scutellum.

Diagnosis.—Midlobe of mesoscutum reticulate with elongate meshes, hence appearing striate; midlobe of mesoscutum delimited from scutellum by a distinct furrow (Fig. 66); clypeus quadratic, as wide as long (Fig. 74).

Description (female).—Length of body = 1.1–1.3 mm.

Colour: Antenna yellowish-brown, ped-

icel and flagellum slightly darker than scape. Head yellowish-brown with weak metallic tinges. Thorax yellowish-brown with weak metallic tinges. Mid and hind coxae pale, fore coxa and remaining parts of legs yellowish-brown. Forewing with a strong fuscous spot below median $\frac{1}{3}$ of marginal vein, spot reaching hind margin. Petiole pale. Gaster yellowish-brown, tergites 1–5 with darker hind margins, 7th tergite and apical ovipositor sheaths dark.

Head: Antenna as in Fig. 70. Frons below cross-groove with weak reticulation; frons above cross-groove and vertex smooth. Clypeus quadratic, as long as wide. Frontal cross-groove V-shaped. Occipital margin with sharp edge.

Mesosoma: Mesoscutum and scutellum with weak reticulation, midlobe of mesoscutum with elongate meshes and hence appearing striate; notauli deep and distinct in posterior $\frac{2}{3}$. Dorsellum small, convex and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Gaster elongate.

36. *Omphale semiglobosa* Hansson

Omphale semiglobosa Hansson, 1996b:39.

Diagnosis.—Mouth opening narrower than height of eye in both sexes; clypeus about as wide as long.

Distribution.—Campeche, Chiapas, Guerrero, Jalisco, Michoacan, Oaxaca, Puebla, Quintana Roo, Tamaulipas, Veracruz. 170 females 40 males. New record for Mexico.

37. *Omphale uruapana* n.sp. (Figs 67, 69, 72, 106, 118)

Type material.—Holotype female labelled "Michoacan, 10mi S Uruapan, 6.vii.1985, J.B. Woolley, 85/032" (USNM). Paratypes: 2 females 10 males with same label data as holotype, 1 male gaster on slide (no. 260) (1 female 5 males LUZM, 1 female 5 males TAMU); 1 male with same label data as holotype but collected

7.vii.1985 (LUZM); 1 female "Michoacan, 28.5mi S Nueva Italia, 9.vii.1985, J.B. Woolley and G. Zolnerowich, 85/045" (TAMU); 1 male "Guerrero, 2mi NE Cahuamilpa, 4.vii.1987, 5300', R. Wharton" (TAMU); 2 females "Guerrero, 6.2mi SW Xochipala, 6.vii.1987, 5670', J.B. Woolley, 87/017" (LUZM, TAMU); 3 females 1 male "Jalisco, 17mi N Guadalajara, 6.vii.1984, J.B. Woolley, 84/019" (1 female 1 male LUZM, 2 females TAMU); 1 female "Jalisco, 6.7mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/021" (LUZM); 1 male "Jalisco, 8.3mi S Autlan on highway 80, 8.vii.1984, J.B. Woolley, 84/024" (TAMU); 1 female "Oaxaca, 8mi NE El Punto, 18.vii.1985, J.B. Woolley and G. Zolnerowich, 85/074" (TAMU); 1 female "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10-11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (LUZM).

Etymology.—"From Uruapan".

Diagnosis.—Mouth opening as wide as height of eye in female, slightly wider (1.1x) than eye in male; clypeus 2× as wide as long.

Description.—Length of body female=1.6-2.0 mm, male=0.8-1.4 mm.

Colour: Scape pale with dorsal edge dark; pedicel and flagellum dark, 5th flagellomere partly to completely pale in female. Frons golden-green. Vertex metallic bluish-green or golden-green. Mesoscutum metallic bluish-green, golden-green or golden-purple. Scutellum golden-green or golden-purple. Propodeum yellowish-brown with metallic tinge, completely yellow in a few specimens. Legs pale, fore coxa dark and metallic in one specimen, femora infuscate in a few specimens. Wings hyaline, weakly infuscate round stigmal vein. Petiole pale. Gaster dark brown with metallic bluish-green tinge, tergites 4 and 5 sometimes pale medially in female; apical part of ovipositor sheaths black.

Head: Antennae as in Figs 67, 69. Frons below frontal cross-groove with weak reticulation; above cross-groove and on ver-

tex smooth and shiny. Clypeus 2× as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove almost straight. Occipital margin with raised carina.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation; notauli distinct and clearly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Petiole in male transverse, 0.7× as long as wide. Female gaster ovate.

38. *Omphale valida* n.sp.

(Figs 68, 71)

Type material.—Holotype female labelled "Guerrero, 1mi NE La Laguna, 17.vii.1984, J.B. Woolley, 84/038" (USNM).

Etymology.—"Valida" is latin for large, referring to size of species.

Diagnosis.—Vertex, mesoscutum and scutellum with strong and raised reticulation; fore tibia with a raised carina along dorsal surface (Fig. 71).

Description (female).—Length of body=2.1 mm.

Colour: Scape pale with dorsal edge dark; pedicel and flagellum dark. Head and mesosoma black and shiny with weak metallic tinge. Fore coxa dark and metallic, mid and hind coxae pale; femora infuscate; tibiae pale; tarsi pale with apical segment infuscate. Wings hyaline. Petiole pale. Gaster dark brown with metallic tinge.

Head: Antenna as in Fig. 68. Frons with weak reticulation. Vertex with raised and strong reticulation. Clypeus as wide as long. Antennal scrobes join on frontal cross-groove. Frontal cross-groove V-shaped. Occipital margin with raised carina.

Mesosoma: Mesoscutum and scutellum with raised and strong reticulation; notauli distinct and clearly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare. Propodeum with weak reticulation.

Metasoma: Gaster ovate.

UNPLACED SPECIES

39. *Omphale dentata* n.sp. (Figs 78, 79, 87, 109, 121)

Type material.—Holotype female labelled "Chiapas, 12.1 km S Palenque, 13.viii.1990, 1200', J.B. Woolley, 90/063" (USNM). Paratypes: 1 male with same label data as holotype (TAMU); 1 female "Chiapas, 8mi N Berriozabal, 9.viii.1990, 3600', J.B. Woolley, 90/057B" (TAMU); 1 male "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068" gaster on slide (no. 236) (LUZM); 2 females "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (LUZM, TAMU); 2 females "Tamaulipas, Reserva El Cielo, Alta Cimas, 3100', 30.vii.1993, J.B. Woolley and K. Wikse, 93/035" (LUZM, TAMU).

Etymology.—"Dentata" meaning "with tooth", referring to medioventral dent on male scape.

Diagnosis. Head smooth and shiny without any reticulation; antennal scrobes join slightly below frontal cross-groove (Fig. 87); flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b); male scape with a dent medioventrally (Fig. 79); male petiole as long as wide.

Description.—Length of body female = 1.0–1.3 mm, male = 0.9–1.0 mm.

Colour. Antenna pale yellowish-brown, apical flagellomere sometimes pale in female. Clypeus dark and metallic. Frons golden-green. Vertex metallic bluish-green to golden-green. Mesoscutum and scutellum metallic bluish-green. Dorsellum and propodeum golden-purple, propodeum pale yellowish-brown in one specimen. Fore coxa infuscate to dark and metallic, remaining parts fore leg, mid and hind legs pale. Wings hyaline. Petiole pale. Gaster golden-purple.

Head: Without frontal cross-ridge. An-

tennae as in Figs 78, 79, i.e. male flagellomeres with verticillate setae (with a single basal whorl of setae on each flagellomere); flagellomeres with sensilla ampullacea long and asymmetric; male scape with a dent medioventrally. Frons and vertex smooth and shiny without reticulation; antennal scrobes join slightly below frontal cross-groove. Occipital margin with a sharp edge.

Mesosoma: Mesoscutum and scutellum with weak reticulation; notauli clearly to weakly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; radial cell hairy. Propodeum smooth, with complete median carina.

Metasoma: Petiole transverse in female, in male as long as wide, both sexes with a raised and sharp carina along anterior edge. Gaster elongate in female. Male genitalia (Fig. 109) with volsellar setae long and strong, placed at different levels, below parameres and base of volsellar ridges; digitus as long as wide, inner digital spine larger than outer; paramere with one seta at apex of paramere; aedeagus (Fig. 121) with aedeagal apodemes $1.2\times$ as long as penis valves.

Remarks.—*Omphale dentata* is very close to *Holcopelte*, the only difference being the enlarged volsellar setae in male genitalia of *O. dentata* (as in all species of *Omphale*), volsellar setae are normal in *Holcopelte*.

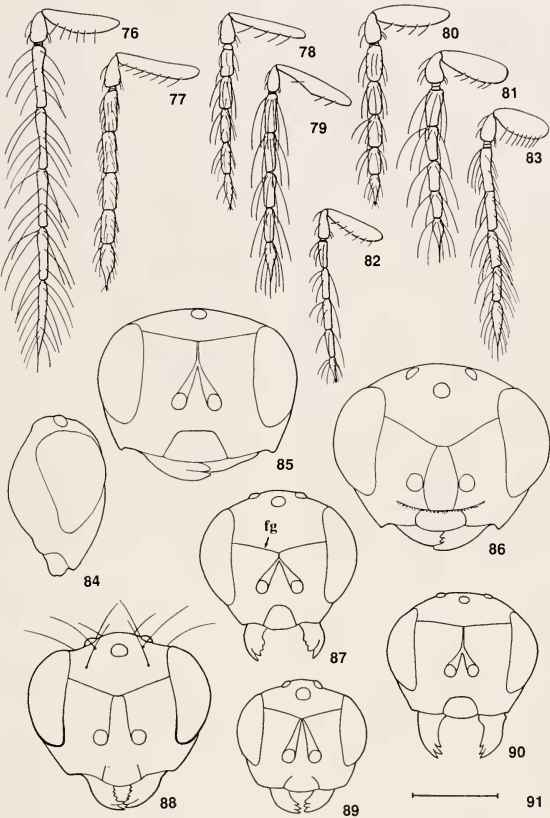
40. *Omphale erginnus* (Walker) (Figs A, 75, 88)

Entedon erginnus Walker, 1839:124.

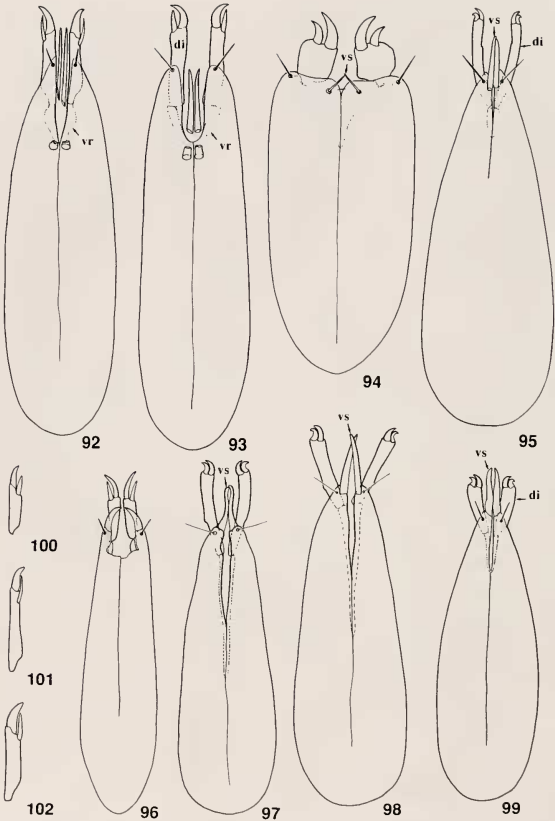
Omphale erginnus (Walker), Graham 1959:202.

Diagnosis.—Setae on vertex and thoracic dorsum long and strong; scape with a small dent apicoventrally in male (this is the apical portion of the ventral sense area); flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b); vertex smooth and shiny; transepimeral sulcus straight.

Distribution.—Chiapas, Michoacan, Oa-



Figs. 76-91. 76-83. Antennae. 76, *tempora*, male. 77, Ditto, female. 78, *dentata*, female. 79, Ditto, male. 80, *sola*, female. 81, Ditto, male. 82, *indistincta*, female. 83, Ditto, male. 84, Head, lateral, *tempora*, female. 85-90. Head, frontal, female. 85, *tempora*. 86, *sola*. 87, *dentata* (fg= frontal cross-groove) 88, *erginurus*. 89, *indistincta*. 90, *nita*. 91, Scale = 0.2 mm (Figs. 1-90), except Figs. 13, 40, scale= 0.4 mm.



Figs. 92-102. 92-99. Phallobase, ventral. 92, *elevata*. 93, *woolleyi* (Figs. 92, 93 with part of volsellar setae omitted to show volsellar ridges). 94, *cherana*. 95, *tria*. 96, *petatlana*. 97, *divina*. 98, *australis*. 99, *carinata*. 100-102. Digitus, ventral. 100, *whartoni*. 101, *metallica*. 102, *petiolata*. di= digitus, vr= volsellar ridge, vs= volsellar seta.

xaca, Puebla. 9 females 2 males. New record for Mexico.

41. *Omphale indistincta* n.sp.

(Figs 82, 83, 89, 110, 123)

Type material.—Holotype female labelled "Jalisco, 4.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/023" (USNM). Paratypes: 2 females with same label data as holotype (LUZM, TAMU); 3 females "Jalisco, 16mi S Autlan, 8.vii.1984, J.B. Woolley, 84/025" (1 female, LUZM, 2 females TAMU); 2 females "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (LUZM, TAMU); 2 females "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (LUZM, TAMU); 2 females "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10-11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (LUZM, TAMU); 4 females 2 males "Oaxaca, 9mi W Tehuantepec, 13.vii.1987, G. Zolnerowich, 87/039", 1 male gaster on slide (no. 250) (2 females 1 male LUZM, 2 females 1 male TAMU).

Etymology.—Name referring to indistinct upper border of clypeus.

Diagnosis.—Clypeus not delimited dorsally (Fig. 89); flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b).

Description.—Length of body female = 1.0–1.4 mm, male = 1.0 mm.

Colour: Scape pale with dorsal edge dark; pedicel and flagellum darker. Frons golden-green to golden-purple in female, metallic bluish-green in male. Vertex golden-green. Mesoscutum and scutellum golden-purple to golden-green. Dorsellum and propodeum golden-green. Fore coxa dark and metallic to pale, mid and hind coxae pale; femora pale to infusate; tibiae pale; tarsi pale with apical segment infusate to completely pale. Wings hyaline. Petiole pale. Gaster golden-purple to golden-green.

Head: Without frontal cross-ridge. Antennae as in Figs 82, 83, i.e. male flagellum with scattered setae; flagellomeres with

sensilla ampullacea elongate and asymmetric. Frons and vertex smooth and shiny; male frons with weak reticulation. Clypeus $2\times$ as wide as long, delimited laterally but not dorsally. Antennal scrobes join on frontal cross-groove. Frontal cross-groove V-shaped. Occipital margin with blunt carina.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation; notauli distinct and clearly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster ovate to elongate. Male genitalia (Fig. 110) with volsellar setae long and strong, placed at same level, below parameres and just below base of volsellar ridges; inner digital spine larger than outer; paramere with one seta close to apex of paramere; aedeagus (Fig. 123) with aedeagal apodemes $0.9\times$ as long as penis valves.

42. *Omphale nita* n.sp.

(Fig. 90)

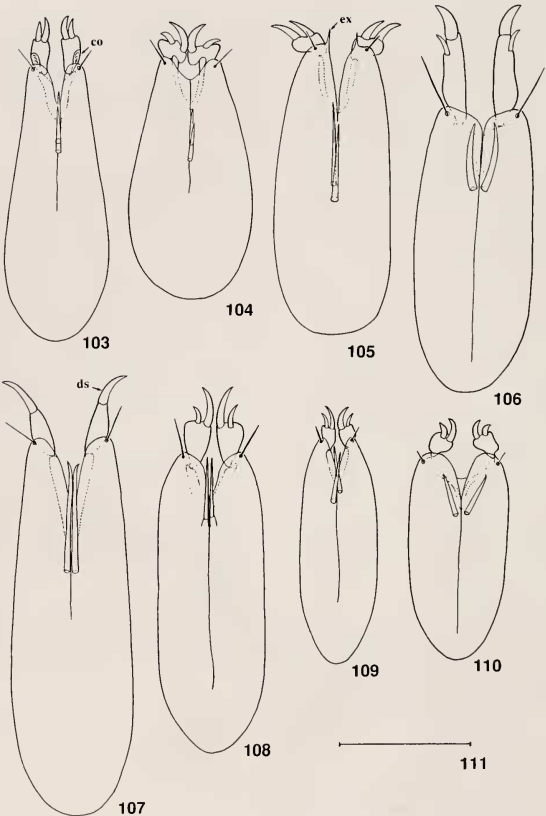
Type material.—Holotype female labelled "Puebla, 5mi SE Izucar de Matamoros, 20.vii.1984, J.B. Woolley, 84/044" (USNM).

Etymology.—No specific derivation.

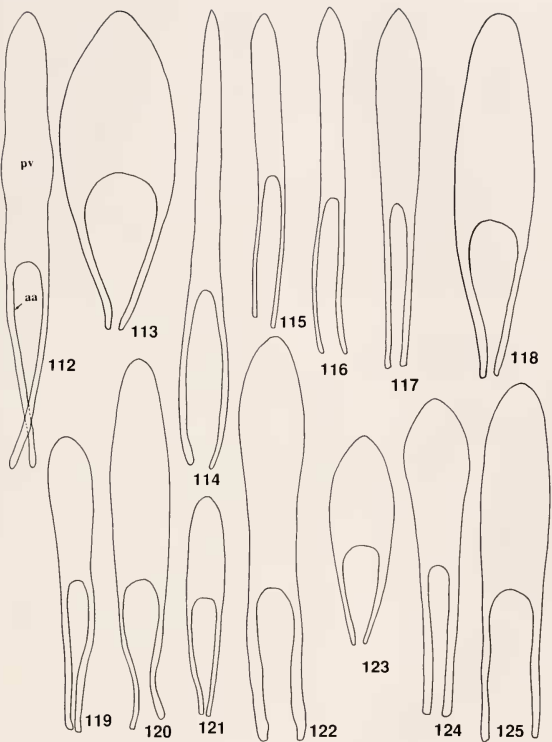
Diagnosis.—Occipital margin smoothly rounded; mesoscutum and scutellum smooth and shiny with weak traces of reticulation in some places; antennal scrobes join below frontal cross-groove (Fig. 90); clypeus transverse, $2\times$ as wide as long; flagellomeres with sensilla ampullacea long and asymmetric (type III sensu Hansson 1996b).

Description (female).—Length of body = 1.8 mm.

Colour: Antenna dark. Frons golden-purple; vertex metallic bluish-purple. Mesoscutum golden-green; scutellum golden-purple. Fore coxa dark and metallic, mid and hind coxae pale, hind coxa metallic at base; femora pale with dorsal surface infusate; tibiae pale; tarsi pale with apical



Figs. 103-111. 103-110. Phallobase, ventral. 103, *foveata* (co = concavity). 104, *pallida*. 105, *zolnerowichi* (ex = extension from phallobase). 106, *uruapana*. 107, *sola* (ds = digital spine). 108, *tempora*. 109, *dentata*. 110, *indistincta*. 111, Scale = 0.1 mm (Figs. 92-125).



Figs. 112–125. Aedeagus, ventral. 112, *woolleyi* (aa= aedeagal apodemes, pv= penis valves). 113, *cherana*. 114, *tria*. 115, *petatlana*. 116, *carinata*. 117, *foveata*. 118, *uruapana*. 119, *fulgida*. 120, *tempora*. 121, *dentata*. 122, *zolnerowichi*. 123, *indistincta*. 124, *pallida*. 125, *sola*.

segment infusate. Wings hyaline. Petiole pale. Gaster dark with metallic tinges, tergites 2–6 with paler median spot.

Head: Without frontal cross-ridge. Antenna as in *indistincta* (Fig. 82); flagellomeres with sensilla ampullacea elongate and

asymmetric. Frons and vertex smooth and shiny. Clypeus 2× as wide as long. Antennal scrobes join below frontal cross-groove. Frontal cross-groove almost straight. Occipital margin smoothly rounded.

Mesosoma: Mesoscutum and scutellum smooth and shiny with weak traces of reticulation in some places; notauli distinct and clearly delimited in posterior 2/3. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Gaster elongate.

Remarks.—The placement of *nita* is difficult since the species groups are mainly based on appearances of structures in male genitalia, and *nita* is known only in the female sex. The female resembles females of *semiglobosa* group, but also females of *tempora* n.sp., another unplaced species.

43. *Omphale sola* n.sp.

(Figs 80, 81, 86, 107, 125)

Type material.—Holotype male labelled "Guerrero, 32mi SE Petatlan, 10.vii.1985, J.B. Woolley, 85/047" (USNM). Paratypes: 17 females 4 males with same label data as holotype (8 females 2 males LUZM, 9 females 2 males TAMU); 1 females 4 males "Guerrero, 6.2mi SW Xochipala, 13.vii.1985, J.B. Woolley, 85/056" (2 males LUZM, 1 female 2 males TAMU); 1 female 1 male with same label data as previous but collected 5.vii (TAMU); 1 female 1 male "Guerrero, 18.2mi S Iguala, 5.vii.1987, 3000', J.B. Woolley, 87/013" (LUZM); 1 female 1 male "Guerrero, 2.1mi NE Cacahuamilpa, 4.vii.1987, 5250', J.B. Woolley, 87/011" (TAMU); 2 males "Guerrero, 2mi NE Cacahuamilpa, 4.vii.1987, 5300', R. Wharton", one gaster on slide (no. 265) (LUZM); 1 male "Guerrero, 15mi SW Chichihualco, 15.vii.1984, J.B. Woolley, 84/034" (TAMU); 1 male "Chiapas, 8.5km N Ishuatan, 2.viii.1990, 1000', J.B. Woolley, 90/050" (TAMU); 2 males "Colima, 7mi SSW Colima, 9.vii.1984, J.B. Woolley, 84/026A" (LUZM, TAMU); 2 females "Jalisco, 5.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/022" (LUZM, TAMU); 1 male "Jalisco, 4.2mi N Autlan Mine Road, 7.vii.1984, J.B. Woolley, 84/023" (TAMU); 1 female "Mi-

choacan, 3mi N Nueva Italia, 8.vii.1985, J.B. Woolley and G. Zolnerowich, 85/042" (TAMU); 1 female "Michoacan, 10mi S Uruapan, 7.vii.1985, J.B. Woolley and G. Zolnerowich, 85/037" (LUZM); 1 male "Michoacan, 49mi SE Aquila, 13.vii.1984, J.B. Woolley, 84/031" (TAMU); 1 female "Oaxaca, 15.1mi N San Gabriel Mixtepec, 3850', 11.vii.1987, J.B. Woolley and G. Zolnerowich, 87/031" (TAMU); 3 females 2 males "Oaxaca, 4.4mi S San Gabriel Mixtepec, 10–11.vii.1987, 2500', J.B. Woolley and G. Zolnerowich, 87/027A" (2 females 1 male LUZM, 1 female 1 male TAMU); 3 females 1 male "Oaxaca, 4.7mi S San Gabriel Mixtepec, 16.vii.1985, J.B. Woolley and G. Zolnerowich, 85/066" (1 female 1 male LUZM, 2 females TAMU); 3 females 1 male "Oaxaca, 29.1mi E Pochutla, 13.vii.1987, 80', J.B. Woolley and G. Zolnerowich, 87/038" (2 females LUZM, 1 female 1 male TAMU); 1 female 2 males "Oaxaca, 2mi N Candelaria Loxicha, 17.vii.1985, J.B. Woolley and G. Zolnerowich, 85/068" (1 male LUZM, 1 female 1 male TAMU).

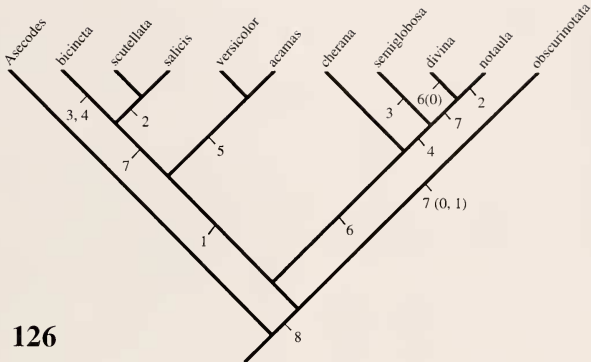
Etymology.—"Sola" meaning "single", referring to single digital spine in male genitalia.

Diagnosis.—Notauli complete and deep throughout; radial cell hairy; frontal cross-groove placed low down on frons; mesoscutum and scutellum with strong engraved reticulation; digitus with one spine only (Fig. 107); flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson 1996b).

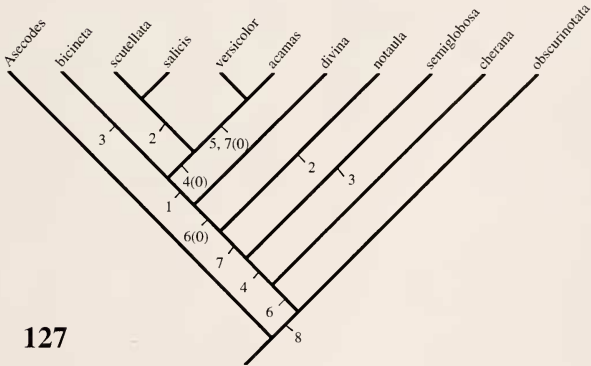
Description.—Length of body female and male = 1.0–1.6 mm.

Colour: Scape pale with dorsal edge infuscate, to completely infuscate; pedicel and flagellum dark. Frons below cross-groove golden-green, golden-red, golden-purple or golden in female, in male metallic greenish-blue or bluish-purple; above cross-groove and vertex golden-green or golden-purple in female, in male metallic greenish-blue or bluish-purple. Mesoscutum weak metallic greenish-blue,

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127



Figs. 126–127. Hypothesized relationships between North American species groups of *Omphale* (15 steps, CI=0.67, RI=0.76). Zero (0) indicates a reversal.

golden-red or golden-purple. Scutellum weak metallic greenish-blue or golden-green. Propodeum golden-green. Forecoxa dark and metallic, mid and hind coxae

pale to all coxae dark and metallic; femora dark; tibiae and tarsi pale to infusate, tibiae dark in a few specimens. Wings hyaline. Petiole dark. Gaster with 1st tergite

metallic greenish-blue (female) or golden-green (male), remaining tergites golden-green (female) or golden-purple (male).

Head: With frontal cross-ridge. Antennae as in Figs 80, 81, i.e. male flagellomeres with verticillate setae (with a single basal whorl of setae on each flagellomere); sensilla ampullacea short and asymmetric. Frons and vertex smooth and shiny; inside ocellar triangle with weak superficial reticulation. Clypeus semicircular and semicircularly protruding. Antennal scrobes join on frontal cross-groove. Frontal cross-groove V-shaped. Occipital margin with an edge.

Mesosoma: Mesoscutum and scutellum with strong engraved reticulation; notauli distinct and clearly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline and with radial cell hairy. Propodeum with weak reticulation.

Metasoma: Female gaster ovate. Male genitalia (Fig. 107) with volsellar setae long and strong, placed at same level, below parameres and just below base of volsellar ridges; with only one strong digital spine; paramere with one seta at apex of paramere; aedeagus (Fig. 125) with aedeagal apodemes $0.7\times$ as long as penis valves.

44. *Omphale tempora* n.sp.

(Figs 73, 76, 77, 84, 85, 108, 120)

Type material.—Holotype female labelled "Michoacan, 13.1mi S Nueva Italia, 9.vii.1985, J.B. Woolley and G. Zolnerowich, 85/044" (USNM). Paratypes: 16 males with same label data as holotype, one male gaster on slide (no. 262) (8 males LUZM, 8 males TAMU); 1 male "Jalisco, 17mi N Guadalajara, 6.vii.1984, J.B. Woolley, 84/019" (TAMU).

Etymology.—"Tempora" meaning "temples", referring to large temples in this species.

Diagnosis.—Mouth opening very wide, $1.7\times$ the height of eye in female, $1.5\times$ in male; temples large (Fig. 84); stigmal vein

enlarged (Fig. 73); occipital margin smoothly rounded; clypeus transverse, $2\times$ as wide as long; flagellomeres with sensilla ampullacea short and asymmetric (type II sensu Hansson 1996b).

Description.—Length of body female = 1.5 mm, male = 1.0–1.6 mm.

Colour: Scape and pedicel yellowish-brown; flagellum dark. Frons dark with weak golden tinges; vertex dark with golden-green tinges. Mesoscutum and scutellum dark with weak golden tinge. Propodeum paler than scutellum, more or less brownish. Fore coxa infusate, mid and hind coxae pale, hind coxa metallic at base; femora and tibiae pale, fore tibia pale to infusate in male; tarsi pale with apical segment infusate, all tarsal segments infusate in some males. Wings hyaline. Petiole pale. Gaster dark with golden-green tinges.

Head: Without frontal cross-ridge. Antennae as in Figs 76, 77, i.e. male flagellomeres with scattered setae; sensilla ampullacea short and asymmetric. Frons and vertex smooth and shiny. Clypeus $2\times$ as wide as long. Antennal scrobes join below frontal cross-groove. Frontal cross-groove almost straight. Occipital margin smoothly rounded.

Mesosoma: Mesoscutum and scutellum with fine engraved reticulation in some places; notauli distinct and clearly delimited in posterior $\frac{2}{3}$. Dorsellum small, flat and smooth. Forewing speculum closed below; without stigmal hairline but with radial cell bare.

Metasoma: Female gaster ovate. Male genitalia (Fig. 108) with volsellar setae long and strong, placed at same level, below parameres and base of volsellar ridges; inner digital spine about twice as large as outer spine; paramere with one seta at apex of paramere; aedeagus (Fig. 120) with aedeagal apodemes $0.7\times$ as long as penis valves.

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